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CASTLE MOUNTAIN PROJECT SAN BERNARDINO COUNTY, CALIFORNIA

SUPPLEMENT TO DRAFT ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

Environmental Impact Statement No. 890053

State Clearinghouse No. 88062708

JANUARY, 1990

Prepared for:

Bureau of Land Management
Needles Resource Area
Needles, California

County of San Bernardino
Environmental Public Works Agency
San Bernardino, California

Applicant:

Viceroy Gold Corporation
Las Vegas, Nevada

Prepared by:

Environmental Solutions, Inc.
Irvine, California





United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CALIFORNIA DESERT DISTRICT OFFICE
1695 SPRUCE STREET
RIVERSIDE, CALIFORNIA 92507-2497



IN REPLY REFER TO:

December 29, 1989

Dear Reviewer:

Enclosed for your review and comment is a supplement to the Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Castle Mountain Project gold mine. The project would be located in the Castle Mountains of northeastern San Bernardino County, near the Nevada border. The purpose of this Draft EIS/EIR Supplement is to provide the most current information on the probable environmental and social impacts that would result from the proposed open pit heap leach gold mine, and the most up-to-date plans for environmental mitigation.

To facilitate review, the Draft EIS/EIR Supplement has been prepared to meet Federal requirements of the National Environmental Policy Act, and State requirements of the California Environmental Quality Act. The document has been prepared by Environmental Solutions, Inc. of Irvine, California, under the direction of the Bureau of Land Management and San Bernardino County.

Written comments on this document will be accepted through March 14, 1990, and should be addressed to:

Bureau of Land Management
Needles Resource Area
Post Office Box 888
Needles, CA 92363-0888
ATTN: Elena Daly

We appreciate your interest in your public lands, and your commitment to participating in this review process.

Sincerely,

Gerald E. Hillier
District Manager



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BUREAU OF LAND MANAGEMENT**

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TO
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State Director

Jan. 2, 1990
Date

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CASTLE MOUNTAIN PROJECT

SAN BERNARDINO COUNTY, CALIFORNIA

DRAFT EIS/EIR SUPPLEMENT

Environmental Impact Statement No. 890053
State Clearinghouse No. 880622708

Abstract:

The Castle Mountain Project is a proposed open pit heap leach gold mine located in the Hart Mining District of Lanfair Valley in northeastern San Bernardino County, California. Lanfair Valley is located in the East Mojave National Scenic Area of the California Desert Conservation Area. A Draft EIS/EIR evaluating the environmental consequences of the proposed project was circulated for public review and comment between March 15, 1989 and May 15, 1989. Responses to comments received on the draft are being prepared for inclusion in the Final EIS/EIR.

This Supplement addresses changes in regulations and modifications to the Proposed Action that have occurred since preparation of the Draft EIS/EIR. In addition, alternatives suggested as a result of Draft EIS/EIR public review are explored and the potential for cumulative impacts is further discussed. A draft mitigation compliance monitoring program is also provided for public review and comment.

The additional information provided in this Supplement does not change the conclusions presented in the Draft EIS/EIR, raise significant new environmental issues, or substantially lessen an environmental effect.

Actions Required:

Bureau of Land Management: Plan of Operations
County of San Bernardino: Site Approval and Mining Reclamation Plan Review

Comments on this Draft EIS/EIR Supplement must be submitted to BLM at the address below no later than 5:00 p.m., March 14, 1990, to be considered in the Final EIS/EIR. For further information, contact BLM or the County at:

U.S. Bureau of Land Management
Needles Resource Area
101 West Spike's Road/P.O. Box 888
Needles, California 92363
Attention: Elena Daly

County of San Bernardino
Environmental Public Works Agency
385 N. Arrowhead Avenue, 3rd Floor
San Bernardino, California 92415
Attention: Joe Bellandi

Applicant:

Viceroy Gold Corporation
9457 Las Vegas Boulevard South, Suite B
Las Vegas, Nevada 89123

Prepared by:

Environmental Solutions, Inc.
21 Technology Drive
Irvine, California 92718

This document has been prepared by Environmental Solutions, Inc., an independent consulting firm, under the direction of the U.S. Bureau of Land Management and County of San Bernardino. A disclosure statement indicating that Environmental Solutions, Inc. has no financial or other interest in the Castle Mountain Project has been filed with BLM in accordance with Federal regulation 40 CFR 1506.5(c).

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CHAPTER 1.0
SUMMARY

1.0 SUMMARY

1.1 INTRODUCTION

1. This Supplement to the Castle Mountain Project Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) (Environmental Solutions, Inc., 1989) has been prepared to address changes in regulations and modifications to the Proposed Action that have occurred since preparation of the Draft EIS/EIR.
2. The Supplement includes discussion of recent changes in regulations affecting the Proposed Action, including State and Federal recognition of the desert tortoise, *Gopherus agassizii*, as a threatened and endangered species, and changes in the San Bernardino County General Plan. Technical changes in the project design and mitigation measures resulting from public review of the Draft EIS/EIR and from design refinement are also described and evaluated. As a result of Draft EIS/EIR circulation, alternatives to the Proposed Action were suggested, and questions were asked regarding the potential for cumulative impacts. These additional alternatives are explored and additional discussion of the potential for cumulative impacts is provided. In addition, a Draft Mitigation Compliance Program is provided for public review.
3. The Castle Mountain Project Draft EIS/EIR was completed in February 1989 and distributed to agencies, organizations, businesses, and individuals for a 60-day review and comment period extending from March 15, 1989, to May 15, 1989. The information provided in this Supplement is to be considered as part of the Draft EIS/EIR. The Final EIS/EIR will be prepared following the Draft EIS/EIR Supplement review and comment period.

1.2 REGULATORY AND PROJECT CHANGES

1.2.1 CHANGES IN REGULATIONS

1. On June 22, 1989, the State of California Fish and Game Commission designated the desert tortoise as a threatened species pursuant to the California Endangered Species Act. On August 4, 1989, the U.S. Fish and Wildlife Service (FWS) published an emergency rule listing the desert tortoise as an endangered species. These decisions were based primarily upon recent information indicating tortoise populations are declining as a result of a respiratory disease. A supplementary survey for desert tortoises on the project site has been completed and a Biological Assessment has been prepared and submitted to FWS in accordance with Section 7 requirements of the Federal Endangered Species Act. The California Department of Fish and Game (DFG) is also being consulted.

2. The updated San Bernardino County General Plan was adopted on June 12, 1989. The updated General Plan did not change the mineral resource zone designation for the project site. The Castle Mountain Project would be consistent with the provisions of the San Bernardino County General Plan, as adopted.

1.2.2 CHANGES IN THE PROPOSED ACTION

1. As a result of agency and public comment on the Castle Mountain Project Draft EIS/EIR, and project design refinement, three design changes have been incorporated into the Proposed Action:
 - The planned alignment of a segment of the Searchlight Access Route has been relocated as a mitigation measure to avoid traffic through Category 1 desert tortoise habitat.
 - The design concept for storage of process solutions is being reevaluated to consider either smaller, covered storage ponds or the use of steel storage tanks.
 - All onsite power generators would use propane instead of diesel fuel. Dust suppression measures would include baghouses instead of agglomerative dust suppression systems for an expected control efficiency of nearly 100 percent.

Each of these design changes is specifically described in this Supplement for its potential effect on the environment. These design changes do not substantially change the potential environmental effects of the Proposed Action as presented in the Draft EIS/EIR, but provide for alternate comparable measures to mitigate potential effects.

1.3 ALTERNATIVES TO THE PROPOSED ACTION

1. Based upon the environmental evaluations completed for the Draft EIS/EIR, the Proposed Action is determined to be the BLM preferred alternative. While a broad range of potential alternatives to the Proposed Action were considered in the Draft EIS/EIR, consideration of additional alternatives was requested as a result of agency and public review. Additional alternatives explored in this document include alternative project location considerations, alternative project sizes, and alternative rates of project development. In addition, methods to implement the No Action Alternative are further explored.
2. As explained in the Draft EIS/EIR, the Proposed Action has been conceived and designed for the purpose of developing particular mineral deposits with specific characteristics. Since the

locations of the deposits are geologically fixed in location, an alternate location is not possible. In addition, given the uncertainties involved in mineral exploration, it is not considered feasible to identify other orebodies that could be developed by the Applicant instead of those at the Castle Mountain site.

3. Environmental impacts similar to those that would occur from the Proposed Action would result from a 50 percent increase or decrease in the size of the project (amount of ore processed). The primary impact change in a reduced project would be the decrease in land disturbance and its effect to wildlife habitat, relative to the Proposed Action. The primary impact change in an enlarged project would be the duration of activities and their potential effects to wildlife, air quality and visual resources.
4. Altering the project ore processing rate for a slower or faster throughput, as compared to the Proposed Action, would result in similar land disturbance impacts. The primary changes would be increases or decreases in impacts to resources such as water use, traffic volumes, air quality and visual resources affected by the duration of project activities. In addition, the intensity of activity for the Faster Project Alternative could increase air quality impacts to a level of significance requiring additional mitigation.
5. Should the No Action Alternative be adopted, procedures to condemn the site or otherwise withdraw it from consideration for mineral production would need to be pursued to preclude future development proposals. Since compensation to the claimant would be required and such appropriation of funds is not contemplated, successful implementation of this alternative is considered unlikely. A review of various methods of acquiring gold indicates that mining of new gold will continue to be important in satisfying future needs.
6. Evaluation of these alternatives determined that they would not substantially lessen one or more of the potential projects effects on the environment. Potential effects of the Proposed Action would be mitigated below a level of significance, as discussed in the Draft EIS/EIR.

1.4 CUMULATIVE IMPACTS

1. The Draft EIS/EIR evaluated the potential for cumulative impacts that could occur as a result of other activities in the area, existing mining operations, and potential future mining that could occur as a result of activities undertaken by the Applicant or other operators. This Supplement

expands that discussion for future mining that could be specifically related to the expansion or other modification to the Proposed Action, and for changes in impacts that would occur if the Proposed Action were operated for longer than the anticipated 10 years.

2. Based upon evaluation of project expansion/modification for a hypothetical unique ore discovery, underground mining, by-product sales, plant or site boundary expansion, the potential cumulative impacts to site or surrounding area resources would not vary substantially from the impacts expected from the Proposed Action. The greatest degree of change would occur if another "satellite" orebody were to be discovered. If such a hypothetical discovery occurred and involved mining of a 15 million ton open pit, the project life could be extended as much as five years and would increase land disturbance and related wildlife habitat. The extended project duration would lengthen the period of potential traffic impacts on wildlife, air quality impacts, and site visual resource effects. Should any of these scenarios occur, additional environmental analysis would be required.

1.5 DRAFT MITIGATION COMPLIANCE PROGRAM

1. The Draft EIS/EIR recommended that a program of monitoring, reporting and verification be adopted to facilitate Bureau of Land Management (BLM) administration of project conditions of approval related to environmental mitigation. The National Environmental Policy Act (NEPA) encourages adoption of such a monitoring and enforcement program where applicable. Such a program is now required as a result of AB 3180 for agencies subject to the California Environmental Quality Act (CEQA). The County of San Bernardino (County) will require monitoring of mitigation measures for activities falling within their jurisdictional responsibility.
2. For the Castle Mountain Project, an integrated mitigation compliance program has been developed for use by both the BLM and County. The program provides that the cost and burden of monitoring and reporting to demonstrate compliance will be the responsibility of the Applicant, with verification and remediation, if necessary, dictated by the agencies. Other government agencies and the public will also have access to the required reports.

CHAPTER 2.0

INTRODUCTION

2.0 INTRODUCTION

2.1 SUPPLEMENT PURPOSE AND PUBLIC REVIEW

2.1.1 PURPOSE

1. This Supplement to the Castle Mountain Project Draft EIS/EIR has been prepared to provide an update on the Proposed Action addressed in the Draft EIS/EIR. This document provides the most current information available on issues related to the Proposed Action and modifications in project design. The preparation of a supplement such as this is encouraged by NEPA and CEQA when there are technical changes to a project or additions to other information presented in the draft environmental document (EIS/EIR).
2. Perhaps the most important issue addressed in this Supplement is the recent State and Federal listing of the desert tortoise, *Gopherus agassizii*, as an endangered species. There also has been an update to the San Bernardino County General Plan. The Proposed Action is consistent with the updated General Plan. Other information provided in this Supplement includes a description of technical design and mitigation measure modifications which have been made to the Proposed Action in response to public review and comment on the Draft EIS/EIR, and refinements by the Applicant in operating techniques and procedures.

2.1.2 PUBLIC REVIEW AND COMMENT

1. This Draft EIS/EIR Supplement has been distributed to agencies, organizations, and individuals which have expressed an interest in the Castle Mountain Project, for review and comment on this additional information. The Supplement has been circulated for a 60-day review and comment period on this additional information. A distribution list is included in Appendix A.

2.2 FINAL EIS/EIR STATUS

2.2.1 DRAFT EIS/EIR REVIEW AND COMMENT

1. The Castle Mountain Project Draft EIS/EIR was completed in February 1989 and distributed for a 60-day review and comment period extending from March 15 to May 15, 1989.
2. Copies of the Draft EIS/EIR were sent directly to responsible, trustee, and other State, Federal, and local agencies expected to have expertise or interest in the resources which may be affected by the Proposed Action. In addition, copies were sent to organizations,

businesses, and individuals with special expertise on environmental impacts and/or who had expressed an interest in this particular project or other activities in the eastern Mojave Desert. About 500 copies of the Draft EIS/EIR were distributed.

3. For the convenience of the reader, the Draft EIS/EIR Table of Contents and Summary of the Draft EIS/EIR are included as Appendices B and C, respectively, for reference purposes.

2.2.2 RESPONSE TO COMMENTS AND FINAL EIS/EIR PREPARATION

1. Responses to comments submitted on the Draft EIS/EIR, and to any additional comments submitted on the material contained in this Supplement, will be prepared for consideration by BLM and County decision makers. The Final EIS/EIR will consist of:
 - The Draft EIS/EIR.
 - This Supplement to the Draft EIS/EIR.
 - Comments and recommendations received on both the Draft EIS/EIR and the Supplement.
 - A list of persons, organizations, and public agencies commenting on the Draft EIS/EIR and Supplement.
 - Responses of the Lead Agencies to significant environmental points raised in the review and consultation process.
 - Any other information added by the Lead Agencies.

The Final EIS/EIR will be prepared following the review and comment period for the Supplement to the Draft EIS/EIR.

CHAPTER 3.0
REGULATORY AND PROJECT CHANGES

3.0 REGULATORY AND PROJECT CHANGES

3.1 CHANGES IN REGULATIONS AND PLANS

3.1.1 THREATENED AND ENDANGERED DESIGNATION FOR DESERT TORTOISE

3.1.1.1 State and Federal Listing

1. On June 22, 1989, the California Fish and Game Commission designated the desert tortoise (*Gopherus agassizii*) as a threatened species, pursuant to the California Endangered Species Act. This decision was based on studies showing that tortoise populations have dropped 90 percent in the last 50 years. Subsequent to this listing by the State, an outbreak of virulent desert tortoise respiratory disease was documented. The disease, often referred to as Respiratory Disease Syndrome, is known to have caused significant declines to certain desert tortoise subpopulations and is believed to be spreading. As a result of these population declines and the potential threat represented by Respiratory Disease Syndrome, the FWS issued an Emergency Rule listing populations of the tortoise, north and west of the Colorado River, as endangered under the provisions of the Endangered Species Act of 1973. The emergency ruling occurred on August 4, 1989, and will be in effect for a 240-day period, during which time the FWS will investigate the data to determine if a permanent listing is warranted. On Friday, October 13, 1989, the FWS published a Proposed Rule, listing the Mojave population as endangered and portions of the Sonoran population as threatened. Public hearings on the Proposed Rule are being held, and written comments are being accepted by FWS through January 11, 1990.
2. Desert tortoise populations have declined over the last 50 years reportedly due to taking of animals as pets, shooting, road kills, raven predation, destruction of burrows by off-road vehicles and cattle, reduction in habitat, destruction of habitat quality, and disease. In response to this decline, the Bureau of Land Management (BLM) recently adopted a range-wide plan for managing desert tortoise habitat (BLM, 1988a). Statewide strategies for implementing this plan are currently being developed; a plan entitled Recommendations for Management of the Desert Tortoise in the California Desert has been prepared (BLM, 1988b).
3. The BLM, California Desert District, has developed an interim map of tortoise habitat categories. This map, shown as Figure 3.1, Desert Tortoise Habitat, is in use until the BLM Desert Plan is formally amended. Lanfair Valley and the Castle Mountain Project site are not shown as a habitat area. However, the California BLM recognizes that any lands where

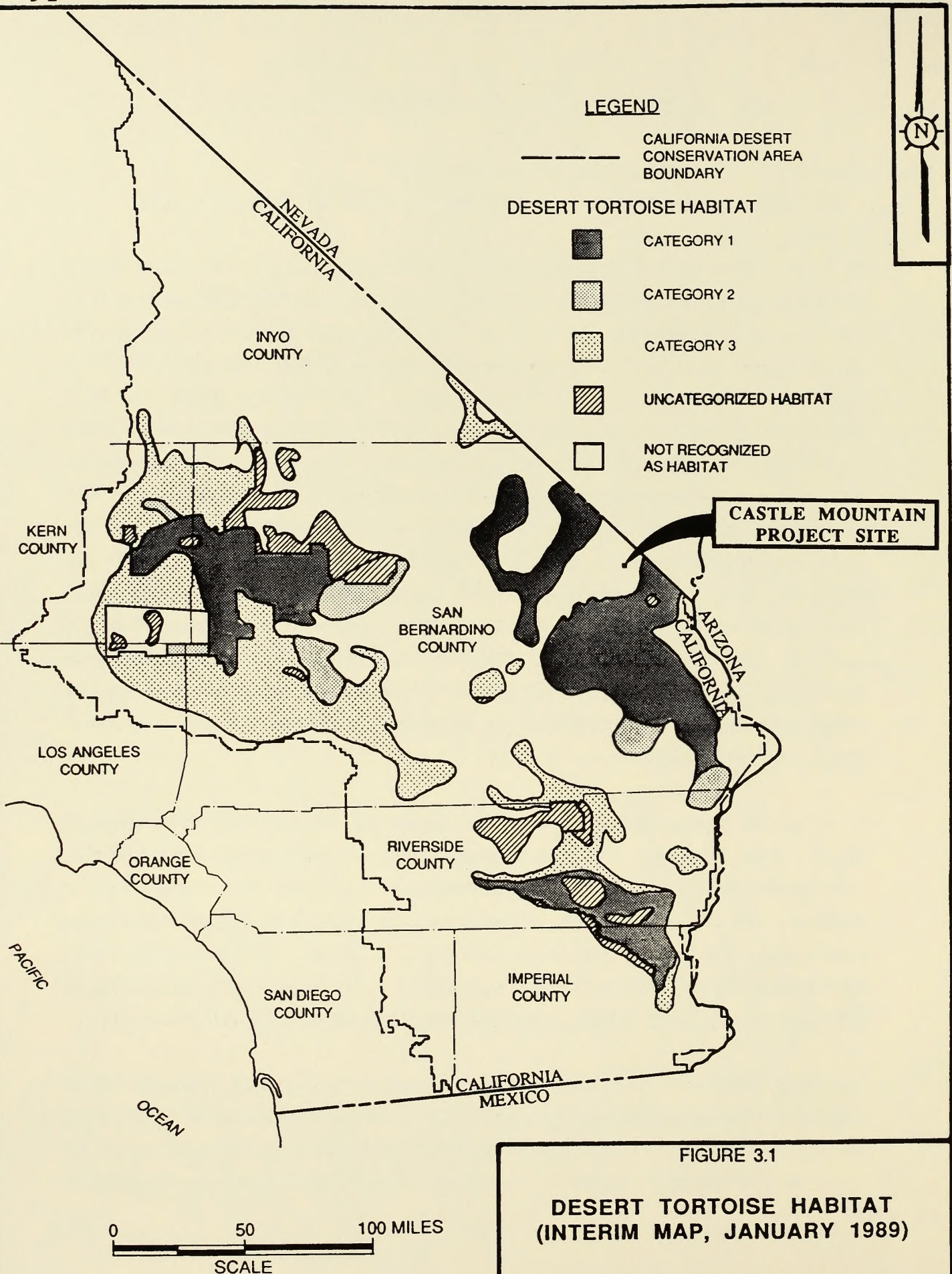


FIGURE 3.1

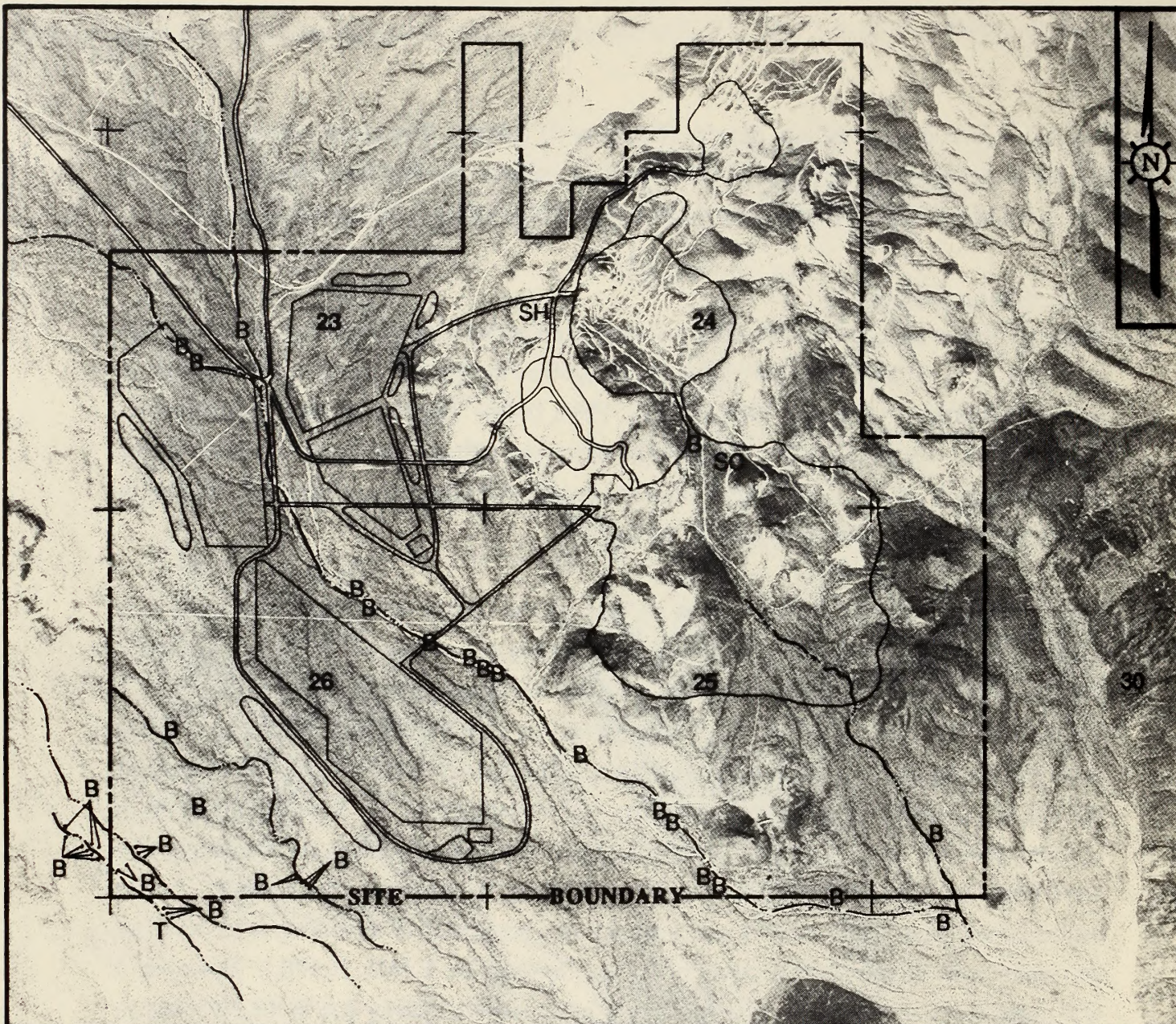
**DESERT TORTOISE HABITAT
(INTERIM MAP, JANUARY 1989)**

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

tortoises occur are at least low density (Category 3) habitat. The lower elevation Ivanpah Valley is designated high density (Category 1) habitat. In Nevada, tortoise habitat at elevations below 1,250 meters (about 4,100 feet) in Piute Valley is designated Category 1.

3.1.1.2 Project Site Tortoises

1. While the desert tortoise has historically occurred in Lanfair Valley, sightings in recent years have been rare. BLM studies have similarly recognized the general absence of the tortoise in significant numbers in Lanfair Valley (Berry, 1988, 1989). The absence of a population has generally been attributed to the valley's high elevation, although studies completed for the Castle Mountain Project Draft EIS/EIR indicate that tortoises do occur in very low densities in at least some portions of eastern Lanfair Valley.
2. The presence of desert tortoise in the vicinity of the Castle Mountain Project site was suspected when a desert tortoise shell was found during an onsite wildlife inventory (Gould, 1987). A live tortoise was later observed south of the proposed project site, in Section 36, T.14N., R.17E., during a cultural resource inventory (UNLV, 1987). Based upon these observations suggesting tortoises may be present in the vicinity of the project site, a survey of the site to ascertain the population densities was completed by Dr. Bayard Brattstrom in October 1988 for the Castle Mountain Project Draft EIS/EIR. Although no tortoises or scat were observed, tortoise burrows were located along the major onsite washes. It was estimated that these data would be representative of a population of about five to ten tortoises per square mile on the lower portions of the site (Section 26, T.14N., R.17E.). However, it was noted that burrows are unreliable for predicting tortoise density due to the difficulty in determining if a burrow is in use or has been abandoned. It was recommended in the Draft EIS/EIR that burrows be located and flagged prior to surface disturbing activities and that if occupied burrows were within areas designated for project facilities, tortoises be relocated.
3. The project site was again inventoried for tortoises by Woodman and Shields in June 1989. The purpose of this survey was to determine burrow locations relative to proposed facilities and reconfirm expected onsite densities. The results, shown in Figure 3.2, Desert Tortoise Survey Results Map, included location of scat, burrows, and a single subadult male tortoise found basking near a burrow in Section 35, just south of the project site. The consultants confirmed the previous estimate by Dr. Brattstrom of onsite densities ranging from 5 to 10 tortoises per square mile. This detailed onsite survey is included as Appendix D.



KEY

TORTOISE SIGN

B	-	BURROW
SH	-	SHELL
SC	-	SCAT
T	-	LIVE TORTOISE

TOPOGRAPHIC FEATURES

	-	WASH
	-	DIRT ROAD
+	-	SECTION BOUNDARY
24	-	SECTION NUMBER

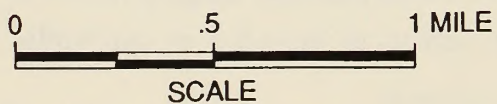


FIGURE 3.2

DESERT TORTOISE SURVEY RESULTS MAP

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

NOTE: SEE DRAFT EIS/EIR FOR DESCRIPTION
OF PROJECT FACILITIES

SOURCE: WOODMAN, 1989

REVISED

3.1.1.3 Federal and State Consultation

1. Based upon the work completed for the Draft EIS/EIR, a Biological Assessment has been prepared to specifically address the potential impacts to the desert tortoise, from construction and operation of the Castle Mountain Project. The Biological Assessment also addresses activities from modifications to the Castle Mountain Project (also described in this Supplement) and has been prepared to provide the necessary information for use by the FWS in completing a Biological Opinion, in accordance with formal consultation requirements of Section 7 of the Endangered Species Act. Such Section 7 consultation is a separate review process, independent of the EIS review under NEPA. While these review processes can be complementary, provisions of the Endangered Species Act requires this separate consultation process.
2. The California Endangered Species Act (CESA) is administered by the DFG. For the Castle Mountain Project, formal consultation with DFG may not be required if no State Lead Agency approvals are necessary. However, DFG will be informally consulted for their comments on the Biological Assessment prepared for FWS.
3. The plans for project development, which are evaluated in the Draft EIS/EIR, are in the process of being finalized for consideration by BLM and County decision makers. During the Draft EIS/EIR review process, the FWS and DFG submitted comments regarding the potential impacts of the Proposed Action. As a result of agency and public concern for potential traffic impacts to tortoise populations, the Applicant has modified the alignment of the Searchlight Access Route to avoid travel through high density desert tortoise habitat in Piute Valley. The mitigated access configuration, modified as a result of the environmental review process, is reflected in the Biological Assessment. FWS will complete their Biological Opinion following a 90-day Biological Assessment review period. This should occur in March or April, 1990.

3.1.1.4 Habitat Compensation

1. The Proposed Action would disturb land inhabited by a low density population of the desert tortoise; the site is therefore designated as Category 3 habitat. While the Draft EIS/EIR defined measures to mitigate the potential impacts on the tortoise, BLM policy and the designation of the tortoise as endangered requires that tortoise habitat disturbed by the Proposed Action be compensated, so that a net benefit to the species is realized.

2. The BLM (1988a) has recommended that compensation for habitat disturbance". . . may be in the form of land, services, or funds. Services may include studies or habitat enhancement." In accordance with this recommendation, several forms of compensation have been proposed, including:

- Reclamation of habitat previously disturbed by other mining activities in the Hart Mining District.
- Land acquisition in Piute Valley Category 1 habitat.
- Reclamation of an existing public road (Clark County Road A68P), and relocation of public access outside of Category 1 habitat.
- Acquisition of YKL Ranch facilities to be used as a future desert tortoise interpretive center and/or for desert tortoise studies.
- Providing increased flexibility for grazing management through acquisition of grazing privileges in the Crescent Peak Allotment, for purposes of facilitating grazing impact studies.
- Providing funds to be used for desert tortoise studies, equipment and services, such as:
 - Cattle exclosure fencing in the Crescent Peak Allotment to facilitate grazing impact studies.
 - Monitoring equipment, such as fiber-optic scopes and radio transmitters.
 - Blood chemistry and bone morphology analyses and professional veterinary services.
 - Salaries and per diem expenses for field studies and data collection on tortoise activity patterns, weight and growth rates and forage.

The final compensation program will include one or more of these proposed methods and will be determined by BLM through formal consultation with FWS, informal consultation with DFG, and will be identified in the FWS Biological Opinion.

3. The Applicant has also entered into an agreement with The Nature Conservancy (TNC) pursuant to which the Applicant will donate funds to TNC for programs to benefit the desert tortoise. Such programs shall include, but are not limited to, research, habitat enhancement, and land acquisition. The agreement stipulates that a portion of the amount to be donated to TNC be offset by compensation measures the Applicant must provide at the direction of the BLM.

3.1.2 SAN BERNARDINO COUNTY GENERAL PLAN UPDATE

1. The San Bernardino County General Plan was updated subsequent to submittal of the applications for Mining Reclamation Plan Review and Site Approval by the Applicant and preparation of the Draft EIS/EIR. The General Plan update was adopted by the County on June 12, 1989.

2. The updated General Plan has been reviewed and compared to the General Plan in use when the Castle Mountain Project Draft EIS/EIR was prepared, especially with respect to the Land Use and Mineral Resource sections. The results, as discussed in the following paragraphs, indicate that modifications included in the updated General Plan do not affect the Draft EIS/EIR determination of Castle Mountain Project consistency with the General Plan.
3. The updated General Plan contains land use policies that support development of mineral resources and provisions for their continued availability. It is recognized that such policies are necessary for the County's economic growth. Land use policies relating to mineral resources include:
 - "In areas containing valuable mineral resources, establish and implement conditions, criteria and standards which are designed to protect the access to, and economic use of these resources" (page II-D-66).
 - "Ensure that land use development proposals within the Mineral Resource Overlay Zone (MRZ) shall be in accordance with the adopted mineral resources management policies of the County" (page II-D-66).
4. The General Plan designation for the project site is MRZ-2. Development of mineral deposits at the Castle Mountain site is permitted by this designation. The Proposed Action is also consistent with policy MR-3(d) (ii) (page II-C-61) for compatibility with surrounding uses since the surrounding area is sparsely populated desert ranch land.
5. Mineral Resource section MR-4 (a - e) (page II-C-61, 62) requires that an application for Mining Reclamation Plan review and Site Approval be filed and approved prior to development of the project. The application requires that the mining and reclamation methods be defined. The application, as filed and described in the Draft EIS/EIR, is consistent with this requirement.
6. Therefore, the Castle Mountain Project would be consistent with the current County planning policies as referenced in the updated General Plan and its mineral resource policies.

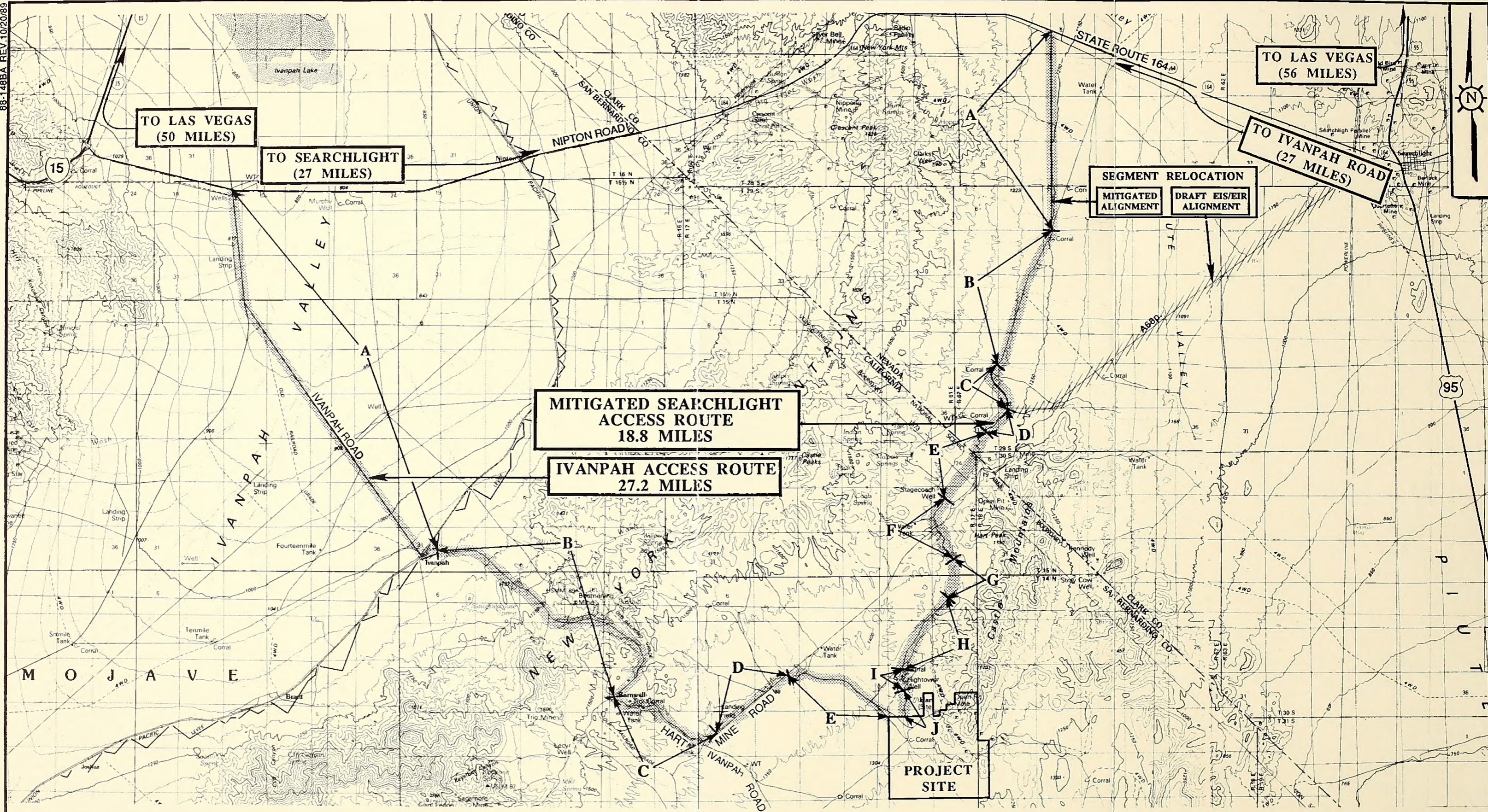
3.2 CHANGES IN THE PROPOSED ACTION

1. As a result of agency and public comment on the Castle Mountain Project Draft EIS/EIR, and project design refinement, three design changes have been incorporated into the proposed project:
 - **Mitigated Searchlight Access Route:** The eastern 9.5-mile segment of the Searchlight Access Route, as presented in the Draft EIS/EIR, has been relocated to avoid traffic through Category 1 desert tortoise habitat. The road segment, which was to have used Clark County Road A68P, will now use, in part, an existing pipeline service road across the YKL Ranch and new road to be constructed outside of Category 1 habitat. In addition, plans for traffic distribution have been revised such that all project traffic would be directed to use this access route, instead of the Ivanpah Access Route.
 - **Solution Storage:** The project design for storage of cyanide solutions as presented in the Draft EIS/EIR included lined ponds. The Draft EIS/EIR recommended substantial mitigation to preclude wildlife access to the solution ponds, including netting for birds and bats, and fencing designed to exclude both larger wildlife species and burrowing animals, such as tortoises. This design is being reevaluated based on engineering detail.
 - **Power Generation:** Power generation design plans presented in the Draft EIS/EIR included both propane (or natural gas) and diesel-fueled generators. Diesel generators were considered necessary to respond to the fluctuating electrical load demands imposed by the primary crusher. Equipment manufacturers have now developed a procedure to use computer regulators that can anticipate the fluctuating electrical load demands, thereby permitting use of propane-fired generators for the crusher. All onsite project electrical generators will now use propane (or eventually natural gas) instead of diesel fuel. The generators will be equipped with catalytic converters, which will reduce emissions of nitrogen oxides by approximately 925 pounds per day from the amounts described in the Draft EIS/EIR.
2. While these technical changes do not substantially change the Proposed Action or environmental evaluations in the Draft EIS/EIR, they are described in this section to provide the public with the most current information. The effect of these changes on project design, environmental impacts, and Draft EIS/EIR mitigation measures are discussed.
3. A minor design modification also being considered for the location of the service road to Well No. W-11, the location of which is shown in Draft EIS/EIR Figure 3.2.9, Preliminary Utilities Plan. The well service road in this area, and the accompanying power line and water line, may be moved outside the east and north boundaries of Section 16 when the final alignment survey is complete. This modification would not be expected to substantially affect any of the analyses completed for the Draft EIS/EIR.

3.2.1 MITIGATED SEARCHLIGHT ACCESS ROUTE

3.2.1.1 Access Location


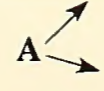
1. Initial plans for project access have been modified to avoid travel through high density (Category 1) desert tortoise habitat, as the result of public comments received on the Draft EIS/EIR requesting an alignment which would avoid Category 1 habitat. The eastern segment of the Searchlight Access Route described in the Draft EIS/EIR used Clark County Road A68P through north-central Piute Valley. The Mitigated Searchlight Access Route would traverse the northwestern flank of Piute Valley at/or above the 1,250 meter ($\pm 4,100$ feet) contour, as shown in Figure 3.3, Proposed Access Routes and Improvements. In this manner, the potential for direct impacts to individual tortoises would be substantially avoided.
2. The Mitigated Searchlight Access Route would begin about 8.5 miles west of Searchlight, Nevada, off State Highway 164, 1.6 miles west of the entrance to the YKL Ranch. The route would proceed about 4.3 miles due south, on a segment to be constructed, then intersect an existing pipeline service road on the YKL Ranch, as shown in Figure 3.3. The next 3.6 miles of the route follow this pipeline service road to a point where the road would connect to a system of unimproved dirt trails which lead to the project site.
3. As indicated in Table 3.1, Proposed Access Improvements, road improvements would consist of widening the pipeline service road from its existing approximate 10- to 12-foot width to about 20 feet. New road construction (including realignment of some segments) would total about 8.8 miles. Road signs would be posted to indicate conditions, as well as speed limits. Maintenance would be provided by the Applicant, as required.
4. The Draft EIS/EIR indicated that while the majority of project traffic would use the Searchlight Access Route, some deliveries of equipment and supplies would reach the site via the Ivanpah Access Route. This concept has been revised with the formulation of the Mitigated Searchlight Access Route alignment to direct all project deliveries as well as employee bus/van pools to use this alignment. As a result, no project traffic would be directed through

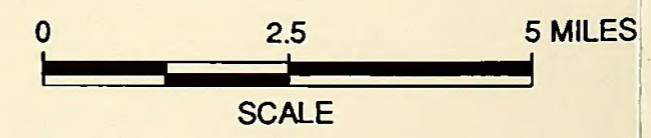


NOTE: THE PROPOSED ACTION INCLUDES USE OF THE MITIGATED SEARCHLIGHT ACCESS ROUTE ONLY. SUPPLY TRUCKS AND EMPLOYEE VAN POOL WOULD BE RESTRICTED TO THIS ACCESS TO LIMIT POTENTIAL IMPACTS TO THE DESERT TORTOISE ALONG IVANPAH ROAD.

REFERENCE: 30X60 MINUTE U.S.G.S. TOPOGRAPHIC MAPS OF IVANPAH, CALIFORNIA-NEVADA; DAVIS DAM, ARIZONA-NEVADA; MESQUITE LAKE, CALIFORNIA-NEVADA; BOULDER CITY, ARIZONA-NEVADA-CALIFORNIA DATED: 1985, 1982, 1985, AND 1983 RESPECTIVELY

LEGEND

-  ACCESS ROUTE
-  ROAD SEGMENT (SEE TABLE 3.1 FOR CORRESPONDING DESCRIPTION)



CONTOUR INTERVAL: 50 METERS

FIGURE 3.3

PROPOSED ACCESS ROUTES AND IMPROVEMENTS

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.



TABLE 3.1
PROPOSED ACCESS IMPROVEMENTS

MITIGATED SEARCHLIGHT ACCESS ROUTE						
Road Segment	Length (miles)	Status	Approximate Existing Width	Proposed Improvement⁽¹⁾	Maintenance Responsibility⁽²⁾	Reclamation
A. None	4.3	Vacant	--	New road construction	Applicant	Yes
B. YKL Ranch Pipeline Road	3.6	Graded dirt	10 to 12 feet	Grade and widen	Applicant	No ⁽³⁾
C. None	1.2	Vacant	--	New road construction	Applicant	Yes
D. Unnamed Trail	0.8	Unimproved trail	10 to 12 feet	Grade and widen	Applicant	Yes
E. None	1.9	Vacant	--	New road construction	Applicant	Yes
F. Unnamed Trail	1.8	Unimproved trail	10 to 12 feet	Grade and widen	Applicant	Yes
G. None	0.9	Vacant	--	New road construction	Applicant	Yes
H. Unnamed Trail	2.3	Unimproved trail	10 to 12 feet	Grade and widen	Applicant	Yes
I. None	0.5	Vacant	--	New road construction	Applicant	Yes
J. Unnamed Trail	1.5	Unimproved trail	10 to 12 feet	Grade and widen	Applicant	Yes
SUMMARY:						
Access Route Length	18.8 miles					
New Road Construction	8.8 miles					
Improvements to Existing Road	10.0 miles					
IVANPAH ACCESS ROUTE (ALTERNATE ACCESS)⁽⁴⁾						
Road Segment	Length (miles)	Status	Approximate Existing Width	Proposed Improvement	Maintenance Responsibility⁽²⁾	Reclamation
A. Ivanpah Road	10.9	Paved	2 lanes	None	San Bernardino County	No
B. Ivanpah Road	7.4	Graded dirt	24 feet	None	San Bernardino County	No
C. Ivanpah Road	2.9	Graded dirt	14 to 16 feet	Add 5 Turnouts ⁽⁵⁾	Applicant	No
D. Hart Mine Road	2.4	Graded dirt	14 to 16 feet	Add 4 Turnouts	Applicant	No
E. Hart Mine Road	3.6	Graded dirt	16 to 18 feet	Add 6 Turnouts	Applicant	No
SUMMARY:						
Access Route Length	27.2 miles					
New Road Construction	0.0 miles					
Improvements to Existing Road	6.5 miles					

⁽¹⁾ Road widening would be limited to about 20 feet.

⁽²⁾ Maintenance by Applicant includes signage, grading, graveling, and dust control.

⁽³⁾ The YKL Ranch pipeline service road will not be reclaimed because it would continue to be used for access to grazing operations on northern pastures following the completion of the Castle Mountain Project.

⁽⁴⁾ The Ivanpah Access Route is not proposed by the Applicant for project traffic. This alternate access is provided for purposes of the Draft EIS/EIR environmental analysis.

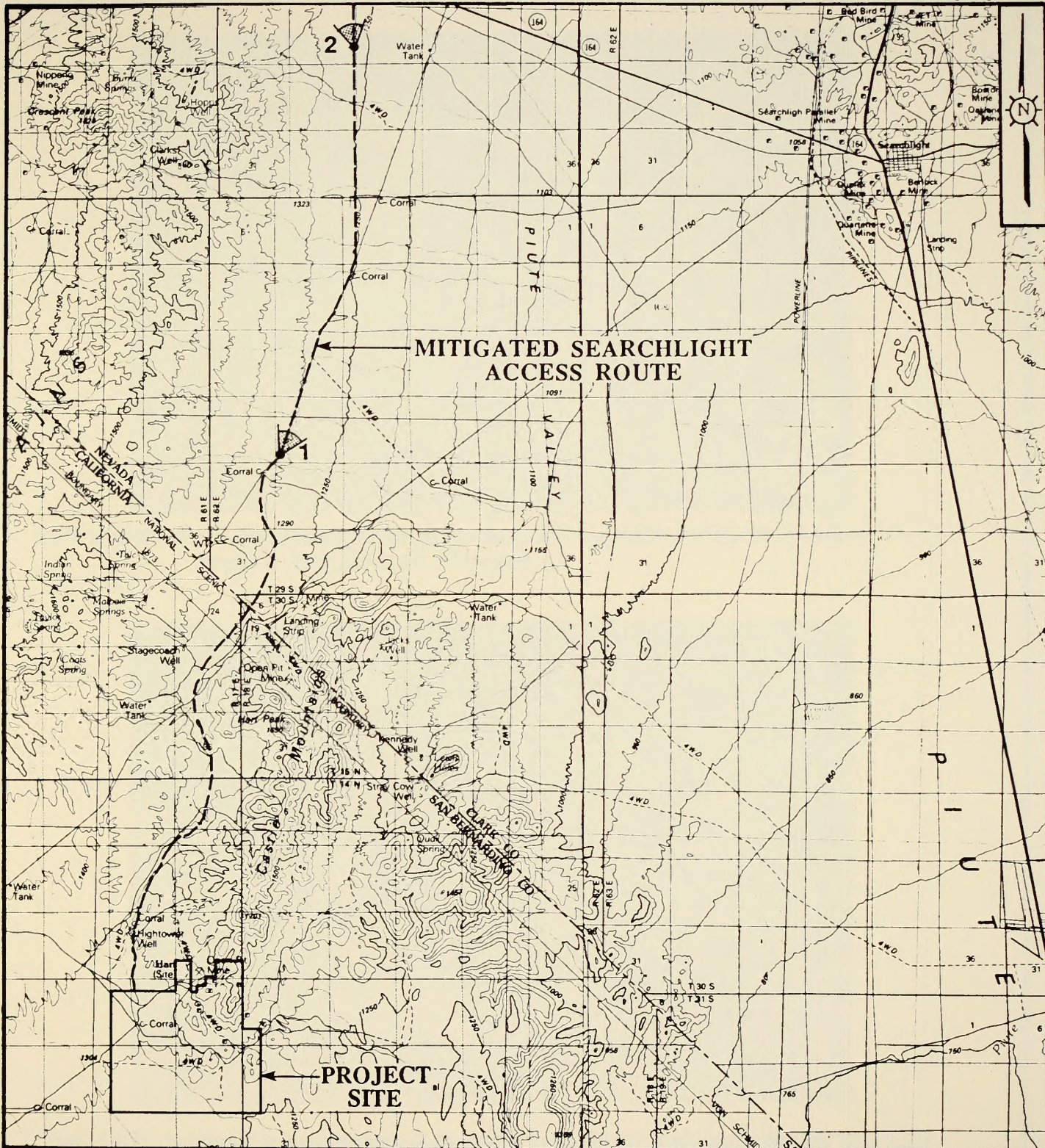
⁽⁵⁾ Turnouts (each approximately 300 feet in length) to be constructed every 0.5± miles.

the Ivanpah Valley Category 1 desert tortoise habitat. This would result in a revised trip distribution (as compared to that presented on Draft EIS/EIR page 3.2-42) as follows:

<u>TRAFFIC SOURCE</u>	<u>IVANPAH ACCESS ROUTE</u>	<u>MITIGATED SEARCHLIGHT ACCESS ROUTE</u>
	Vehicles (ADT)	Vehicles (ADT)
Mining/Processing staff	0 (0)	28 (56)
Management staff	0 (0)	10 (20)
Equipment/Supplies deliveries	0 (0)	6 (12)
Bus/Van pool	<u>0 (0)</u>	<u>10 (20)</u>
TOTAL	0 (0)	54 (108)

3.2.1.2 Description of Existing Environment

1. The YKL Ranch segment of the Mitigated Searchlight Access Route is located northwesterly of the former Clark County Road A68P alignment in Piute Valley. Photographs taken along the mitigated alignment are located in Figure 3.4, Photograph Viewpoint Locations, and shown in Figure 3.5, Mitigated Searchlight Access Route Photographs.
2. Since the mitigated alignment is in the general vicinity of the Clark County Road A68P alignment evaluated in the Draft EIS/EIR, the environmental conditions are similar, except for desert tortoise densities and plant communities crossed. The southern portion of the alignment (Segment B in Figure 3.3 and Photograph No. 1 in Figure 3.5) uses an existing YKL Ranch road used to maintain livestock watering facilities and ranch fences. The northernmost portion of the alignment (Segment A in Figure 3.3 and Photograph No. 2 in Figure 3.5) would not continue along the YKL Ranch maintenance road, but would instead be constructed as a new road segment located above the 4,100 foot elevation, so as to avoid crossing Category 1 desert tortoise habitat.
3. A supplemental vegetation inventory was completed in October 1989 along the Mitigated Searchlight Access Route. The methodology and results were consistent with June 1988 studies done for the Draft EIS/EIR. The plant species found were the same as previously identified and listed, and no additional special interest species were identified.



SEE FIGURE 3.5 FOR PHOTOGRAPHS.

0 2.5 5 MILES
SCALE

LEGEND

- APPROXIMATE VIEWPOINT LOCATION
- ▽ DIRECTION OF VIEW

BASE REFERENCE: U.S.G.S. 30 x 60 MINUTE SERIES
TOPOGRAPHIC MAPS OF IVANPAH,
CALIFORNIA, AND DAVIS DAM,
NEVADA, BOTH DATED 1985

FIGURE 3.4

PHOTOGRAPH VIEWPOINT LOCATIONS

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.



VIEWPOINT 1: YKL Ranch water pipeline maintenance road. The project would grade a portion of this existing road alignment. View north.



VIEWPOINT 2: Vegetation and topography in the vicinity of site for new road construction near YKL ranch. View north. New construction would provide project and public access outside Category 1 desert tortoise habitat.

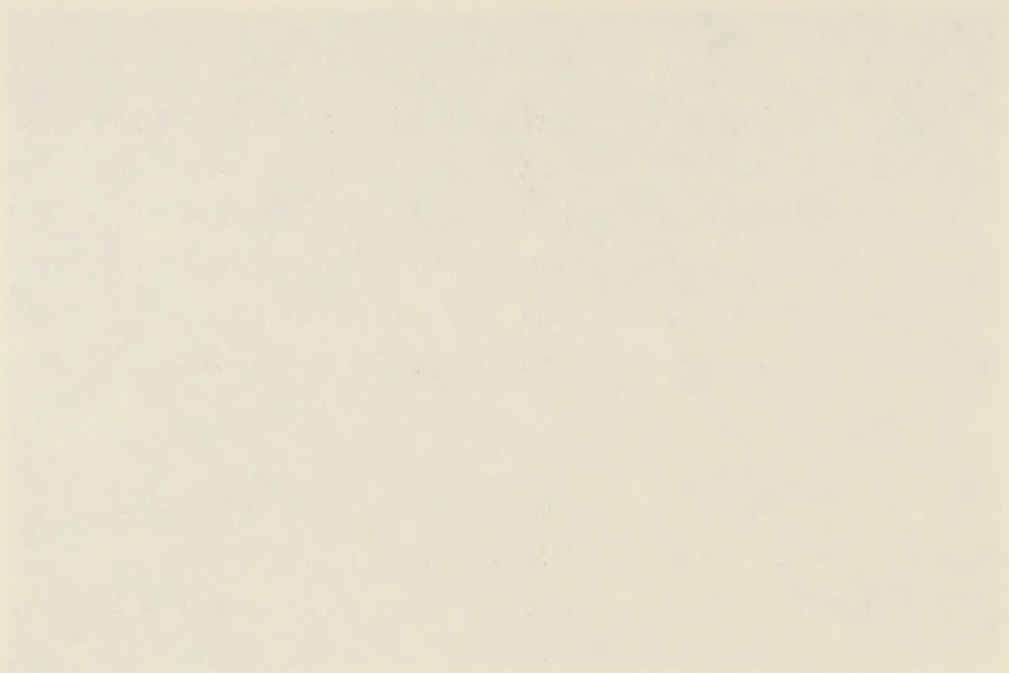
FIGURE 3.5

**MITIGATED
SEARCHLIGHT ACCESS ROUTE
PHOTOGRAPHS**

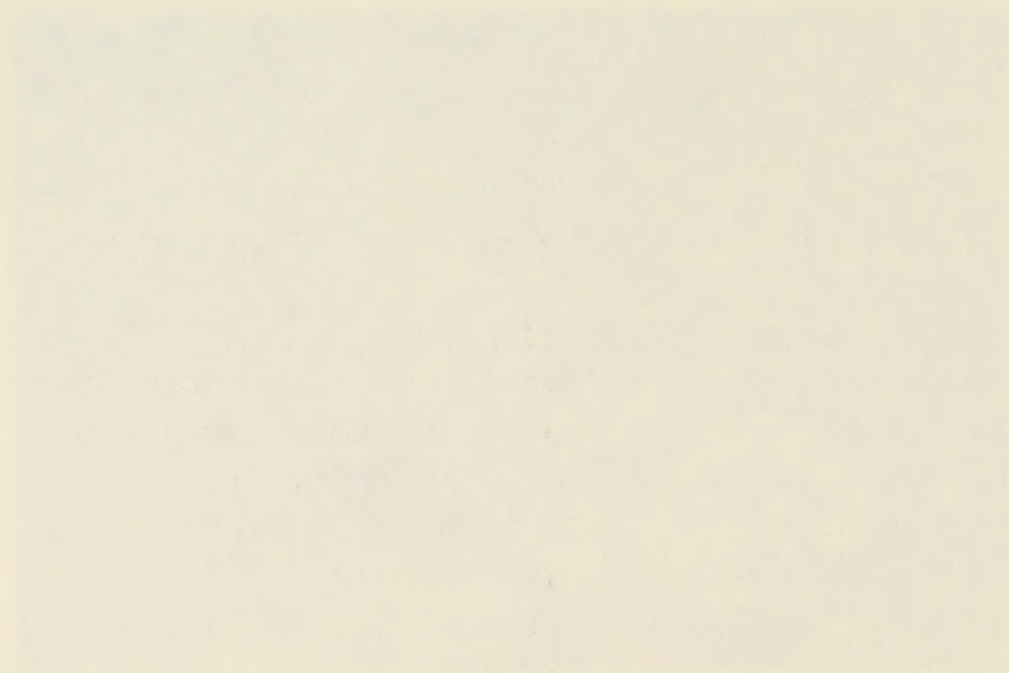
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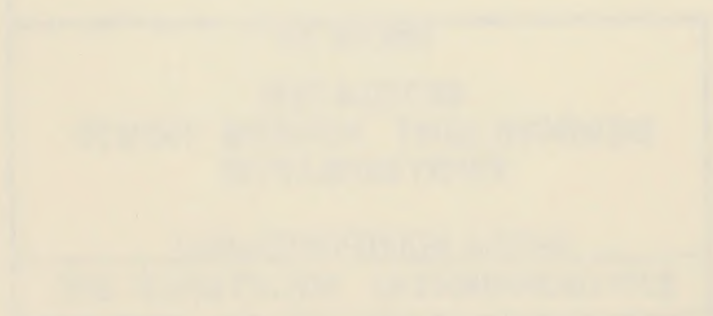
For photograph location, refer to Figure 3.4



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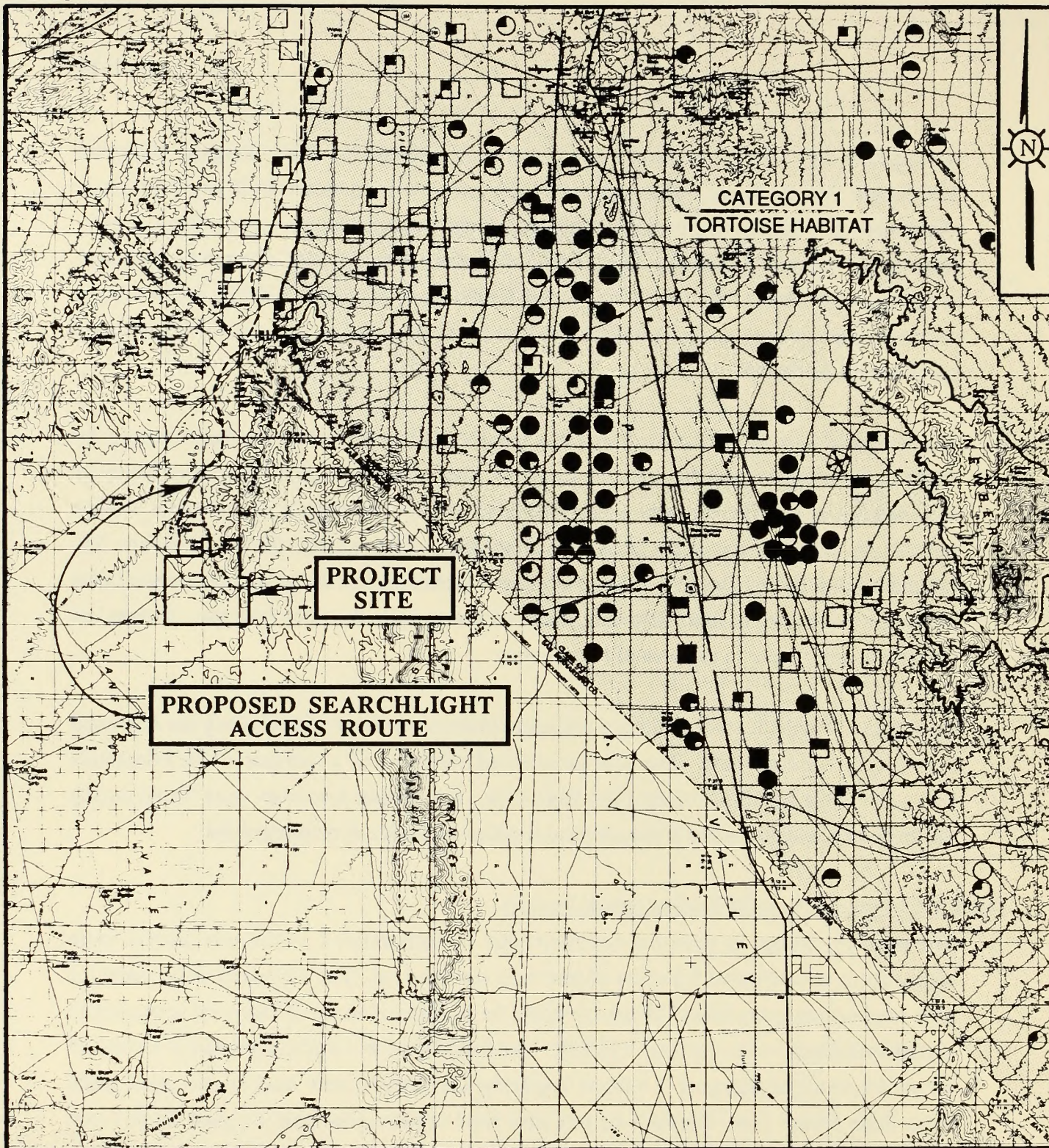
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4. A supplementary wildlife inventory was completed in September 1989 along the Mitigated Searchlight Access Route. The purpose of this effort was to ascertain if any substantial differences in wildlife were present in this area of the valley, compared to the Clark County Road A68P segment previously considered. Methodology and results of these studies were consistent with those of the June 1988 studies for the Draft EIS/EIR. Wildlife species found were the same as previously identified and listed, and no additional special interest animal species were identified.
5. The Mitigated Searchlight Access Route was specifically inventoried for the desert tortoise by BLM staff biologists from the Stateline Resource Area office in August 1989. The inventory included desert tortoise transects at eight selected locations, designed to determine tortoise population densities along the proposed alignment. The results, shown in Figure 3.6, Northern Piute Valley Desert Tortoise Population Densities, include other past transect data and confirm previous transect data indicating that low tortoise densities (less than 20 tortoises per square mile) occur in this area of Piute Valley.
6. On August 17 and 18, 1989, a cultural resources inventory was completed along the Mitigated Searchlight Access Route. The area inventoried consisted of a corridor 13.68 kilometers (8.5 miles) long by 60.97 meters (200 feet) wide. No cultural resources were found during the inventory, and no further archaeological work or avoidance is recommended.

3.2.1.3 Changes in Potential Environmental Impacts

1. The primary change in potential environmental impacts relative to the new access route alignment is an additional 5.5 miles of new road construction. The estimated disturbance for new road construction (about 20 acres) would be in addition to the 20 acres of access route disturbance described in the Draft EIS/EIR. The majority of this land disturbance is a result of the desire to avoid Category 1 habitat, requiring 4.3 miles of new road construction south from State Route 164. Portions of this new road construction pass through Joshua tree woodland vegetation (see photograph No. 2 in Figure 3.5) and would result in some Joshua tree removal. The overall length of the Searchlight access road has been decreased by 1.5 miles with the mitigated alignment, compared to the alignment described in the Draft EIS/EIR.



LEGEND

TRANSECTS PRIOR TO 1987	CONDUCTED POST 1987	NUMBER OF TOTAL ADJUSTED SIGN (TAS)	RELATIVE DENSITY
		0	LOW
		1-3	LOW
		4-7	MODERATE
		8-11	MODERATE-HIGH
		> 12	HIGH-VERY HIGH

0 2 4 MILES
SCALE

FIGURE 3.6

NORTHERN PIUTE VALLEY DESERT TORTOISE POPULATION DENSITIES

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

SOURCE: B.L.M. TORTOISE TRANSECTS STUDY 1987.
REFERENCE: 30X60 MINUTE U.S.G.S. TOPOGRAPHIC MAP OF
IVANPAH, CALIFORNIA-NEVADA
DATED: 1979

2. Based upon the vegetation, wildlife, and cultural resource studies completed along the mitigated access alignment, no significant environmental effects are anticipated as a result of construction or use of this road segment.
3. In order to reduce future impacts to the Piute Valley desert tortoise population, the Applicant has agreed to reclaim Clark County Road A68P, subject to BLM approval of reclamation procedures and Clark County, Nevada, road right-of-way abandonment procedures. Future public access to the northern Castle Mountains and Lanfair Valley would be provided by the Mitigated Searchlight Access Route, which will be improved and maintained by the Applicant. In this manner, public traffic impacts to the Piute Valley Category 1 tortoise habitat would be reduced. Reclamation of existing roads receiving little use in Category 1 habitat is recommended by the BLM Crescent Peak Technical Review Team in the draft report Issues, Recommendations, and Justifications (CPTRT, 1989).

3.2.1.4 Changes in Mitigation Measures

1. The modified access route alignment is a mitigation measure designed to reduce or eliminate potential traffic impacts of the Proposed Action and the public on the desert tortoise. The majority of the Draft EIS/EIR mitigation measures relating to road construction and use are applicable. However, some Draft EIS/EIR measures designed to protect tortoises from traffic through Category 1 habitat have been changed as a result of this realignment and because all project traffic will be directed to use this route only. Some measures have been deleted, while others have been added, as shown below.
2. Draft EIS/EIR mitigation measures deleted:
 - Access Road Tortoise Fencing
 - **Measure Deleted:** "To mitigate the project's contribution to the cumulative traffic impact on the desert tortoise, the Applicant shall construct tortoise fencing in crucial habitat along portions of Clark County Road A68P and Ivanpah Road. The length of fencing to be constructed by the Applicant shall be determined by BLM, based upon the length of road through crucial habitat, tortoises densities, and the portion of anticipated project traffic on each road. Where appropriate, cattle fencing and cattle guards would be incorporated into tortoise fencing design to maintain cattle movement patterns. Specific fence lengths, height (above and below ground), fence locations, location of culverts, and construction standards shall be developed based upon recommendations and specifications acceptable to BLM. Fencing shall be checked regularly for status, and repairs shall be made where necessary to maintain proper function" (Draft EIS/EIR Pages 6.5-3 and 6.5-4).

- **Justification:** As discussed above, plans for project access and improvements have been modified to avoid traffic through Piute Valley Category 1 habitat (formerly referred to as crucial habitat). Desert tortoise fencing along the access road will therefore not be necessary.
- Access Road Fencing Studies
 - **Measure Deleted:** "Prior to project implementation, the Applicant shall complete an initial inventory of desert tortoise densities along the portions of the Ivanpah Access Route and Searchlight Access Route to be fenced in a manner acceptable to BLM. Inventories shall be repeated once each year during the life of the project to determine the effectiveness of tortoise-proof fencing and need for culverts. If, after about three years of study, BLM determines that the fencing is not at least mitigating the impact of project traffic, additional fencing and/or culverts may be required" (Draft EIS/EIR Pages 6.5-3 and 6.5-4).
 - **Justification:** Since access route tortoise fencing is not now required, monitoring of fencing effectiveness is not appropriate.

3. Mitigation measures added:

- The easterly segment of the Searchlight Access Route shall use an alignment along the western flank of Piute Valley at or above the 1,250 meter elevation, including a segment known as the YKL Ranch Maintenance Road to avoid traffic through Category 1 tortoise habitat. Access road construction costs shall be the responsibility of the Applicant. Any tortoise burrows located within the alignment of new road segment construction shall be flagged and tortoises, if present, removed according to procedures acceptable to BLM and FWS.
- Subject to BLM approval of reclamation procedures and public road right-of-way abandonment procedures to be implemented by Clark County, Nevada, the Applicant shall provide barriers to vehicle traffic on County Road A68P to render it impassable. Costs for reclaiming of the 9.5 mile road shall be the responsibility of the Applicant.

3.2.2 SOLUTION STORAGE

3.2.2.1 Modified Solution Storage Design

1. The Draft EIS/EIR description of the Proposed Action included a discussion of the process solution storage ponds (Draft EIS/EIR, page 3.2-17). Planned design characteristics included:

<u>POND TYPE</u>	<u>QUANTITY</u>	<u>MAXIMUM DEPTH (Feet)</u>	<u>DIMENSION (Feet)</u>	<u>CAPACITY (Gallons)</u>
Intermediate	2 ⁽¹⁾	20	200 x 170	2 million
Pregnant	2 ⁽¹⁾	20	200 x 170	2 million
Barren	1	15	370 x 215	5 million

Final design was to include provisions to control access to the ponds by both humans and wildlife. The Draft EIS/EIR specified that chain link fencing would surround each pond area and they would be covered with netting or other suitable covering acceptable to BLM to deny access to birds and bats. Total storage capacity for one pond of each type would be nine million gallons, to meet criteria established by the California Regional Water Quality Control Board (RWQCB). Storm run-off from leach pad areas (both active and inactive) would be distributed between the three ponds.

2. The Applicant is reconsidering this solution storage concept, based upon design modifications required to accommodate the Draft EIS/EIR wildlife mitigation measures for fencing and netting. Two design concepts are presently being evaluated for engineering and operational feasibility:
 - **Smaller Storage Ponds:** Use smaller solution storage ponds would simplify installation and maintenance of bird-proof netting.
 - **Solution Storage Tanks:** Use of steel storage tanks for solution would also provide enhanced protection of birds and bats, but at some loss of operational flexibility and a higher capital cost.

These design concepts are discussed in the following paragraphs.

3. **Smaller Storage Ponds:** Smaller solution storage ponds would allow bird-proof netting to be effectively placed with a minimum of supporting framework and associated maintenance problems that could result from the larger ponds described in the Draft EIS/EIR. This design could be accomplished by constructing three small ponds each with a capacity of

(1) Initially, only one of each pond type would be installed. Duplicate facilities would be installed at such time as the northeast pad areas were constructed and placed in service.

approximately 1.2 million gallons for active leaching use, and one large pond that would only be used to hold run-off from the inactive portions of the leach pads due to stormwater from a Probable Maximum Precipitation (PMP) event.⁽¹⁾ Should this concept be incorporated into final project design, the following approximate pond characteristics would apply:

<u>POND TYPE</u>	<u>QUANTITY</u>	<u>MAXIMUM DEPTH (Feet)</u>	<u>DIMENSION (Feet)</u>	<u>CAPACITY (Gallons)</u>
Intermediate	2 ⁽²⁾	20	140 x 180	1.2 million
Pregnant	2 ⁽²⁾	20	140 x 180	1.2 million
Barren	1	20	140 x 180	1.2 million
Stormwater basin	1	20	180 x 400	5.4 million

4. Design of these ponds is illustrated in Figure 3.7, Solution Storage Ponds, Conceptual Drawing. Solution draining from the active leach pads would be transported in pipes placed in lined ditches, directly to the pregnant and intermediate solution ponds. Storm run-off from active leach pad areas would flow first into the pregnant pond, then the intermediate pond, then the barren pond, prior to being stored in the stormwater catchment basin. With this configuration, the stormwater catchment basin would rarely be used for solution storage. The stormwater basin would be sized so that the combined storage capacity of all four ponds would be about nine million gallons, as required by the RWQCB. This capacity is required to impound all stormwater run-off from the piles and from cyanide solution collection, transport and storage facilities during a PMP event, plus 24 hours of solution drain-down from the heap leach piles. The storage ponds and stormwater catchment basin would be double lined with impermeable liners, and would be equipped with leak detection systems. The area would be fenced with chain link fencing, and the three solution storage ponds would be equipped with netting designed to exclude birds and bats. Since the stormwater catchment basin would normally be dry or contain only very dilute cyanide solution, it would not be netted. Water that collects in the catchment basin would be retained to meet make-up requirements in the leaching circuit.

(1) A PMP at this site is defined as 4.61 inches of precipitation over a one hour period.

(2) Initially, only one of each pond type would be installed. Duplicate facilities would be installed at such time as the northeast pad areas were constructed and placed in service.

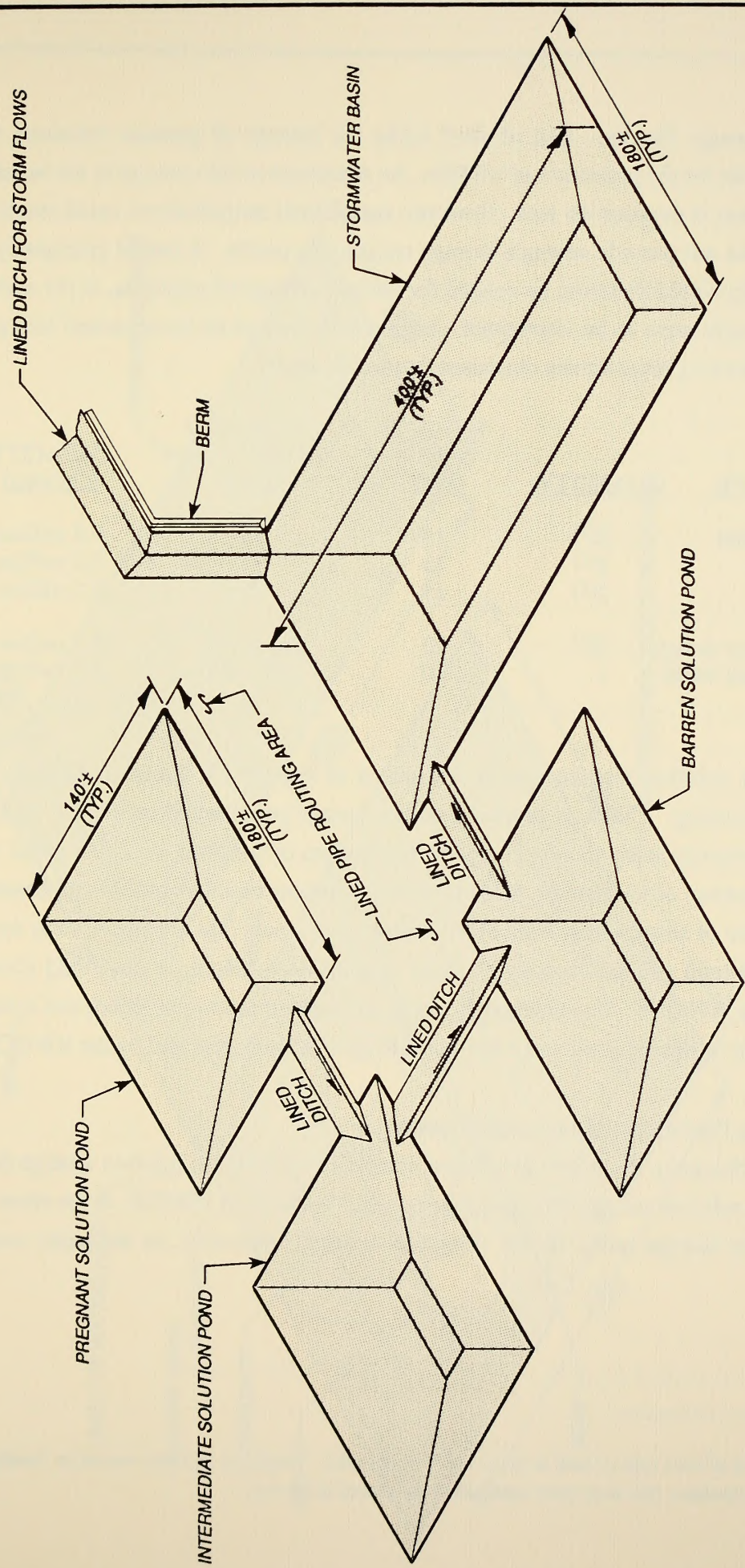


FIGURE 3.7

**SOLUTION STORAGE PONDS
CONCEPTUAL DRAWING**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

5. **Solution Storage Tanks:** Use of steel tanks for storage of process solutions would similarly provide for the protection of wildlife. An advantage to this concept is the benefit of a limited reduction in evaporation loss. However, operational complications could result, since the tanks would not provide as much storage capacity as ponds. A netted emergency pond below the tanks would therefore be needed for backup storage of solutions, in the event that the leaching cycle were to be interrupted. Should this concept be incorporated into project design, the following approximate characteristics would apply:

<u>TANK TYPE</u>	<u>QUANTITY</u>	<u>HEIGHT/ DEPTH (Feet)</u>	<u>DIAMETER/ DIMENSION (Feet)</u>	<u>CAPACITY (Gallons)</u>
Intermediate	2 ⁽¹⁾	15	75	0.5 million
Pregnant	2 ⁽¹⁾	15	75	0.5 million
Barren	2 ⁽¹⁾	15	75	0.5 million
Emergency storage	2 ⁽¹⁾	10	365 x 345	2.1 million
Stormwater basin	1	20	180 x 400	5.4 million

6. Design of the solution storage area is illustrated in Figure 3.8, Solution Storage Tanks Conceptual Drawing. The three process solution storage tanks would be located on a bench within an emergency solution storage pond. The bottom of the pond would be about 10 feet below the elevation of the bench. A stormwater catchment basin would also be constructed for containment of stormwaters from inactive leach pad areas. The storage system would be designed for a total storage capacity of about nine million gallons, as described above and dictated by the RWQCB. The emergency pond, stormwater catchment pond, and associated facilities would be double-lined and constructed to specifications dictated by the RWQCB.

3.2.2.2 Changes in Potential Environmental Impacts

1. The primary change in the potential environmental impact of these solution storage designs, relative to the solution storage arrangement evaluated in the Draft EIS/EIR, is the visual effect of the solution storage tanks, if that design is selected. However, as the tanks would be

(1) Initially, only one of each type of tank or pond would be installed. Duplicate facilities would be installed at such time as the northeast pad areas were constructed and placed in service.

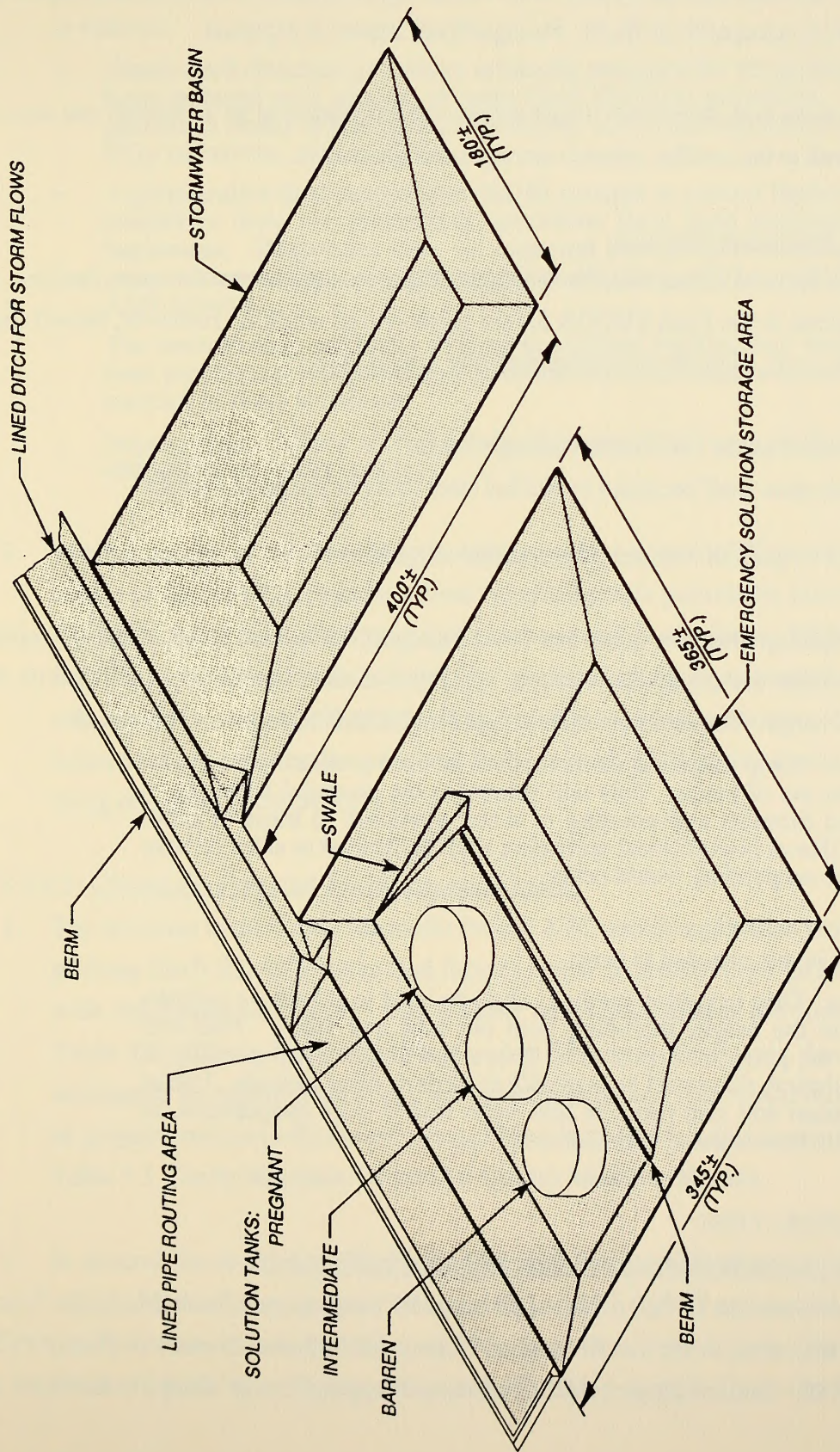


FIGURE 3.8

SOLUTION STORAGE TANKS CONCEPTUAL DRAWING

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

located in an excavated area at an elevation below that of the surrounding berm (to permit gravity flow of solution into the tanks), they would not be readily visible. Tanks would be painted with colors acceptable to BLM. No significant impact is expected.

2. The solution storage tank alternative would require the excavation of an additional one acre of land, as compared to the smaller solution storage pond alternative.

3.2.2.3 Changes in Mitigation Measures

1. Use of either of these modified solution storage designs would perform the same function as measures identified in the Draft EIS/EIR for the protection of wildlife. However, should steel storage tanks be used, additional mitigation measures would apply:
2. Mitigation measures added for Solution Storage Tanks:
 - Process solutions shall be stored in welded steel tanks designed to exclude wildlife.
 - Tanks shall be painted with colors acceptable to BLM.
3. A related mitigation measure also has been changed, based on Draft EIS/EIR public comments, to delete the use of conventional sprinklers to distribute process solution on the sides of the ore heaps. The measure, included on Draft EIS/EIR page 6.5-2, is stated:
 - **Irrigation:** "Drip irrigation methods shall be used to distribute solution directly on top of heaps. This will minimize the potential exposure to sprays and droplets and ponding of water available to birds or other animals. Use of conventional sprinklers shall be limited to sides of heap piles where no ponding would occur."

This measure is herein changed to read:

- **Irrigation:** Drip irrigation methods shall be used to distribute solution directly on the heaps, including both the tops and sides. This will minimize the potential exposure to sprays and droplets and ponding of process solution, that could be available to birds or other animals. Use of drip irrigation will also result in less water lost through evaporation, as compared to conventional sprinkler irrigation.

3.2.3 POWER GENERATION

3.2.3.1 Modified Electrical Generation and Dust Suppression Measures

1. An Authority to Construct (ATC) permit application for the proposed Castle Mountain Project was originally submitted to the San Bernardino County Air Pollution Control District (APCD) in February 1989. Certain project modifications and application of more conservative air

contaminant emissions calculation methodologies led to a decision to re-submit the ATC permit application in August 1989. Revisions to the original application may be summarized as follows:

- Diesel-fired electrical generators originally proposed for the project have been replaced with smaller, propane-fired electrical generators. These generators would be equipped with catalytic converters designed to reduce NO_x emissions.
 - Agglomerative dust suppression (ADS) systems to control fugitive dust emissions from ore processing operations have been replaced with baghouses. Baghouses have an expected control efficiency of 99.9 percent, compared to an expected control efficiency of 97 percent for the ADS systems.
 - The methodology originally utilized to estimate fugitive dust emissions from process transfer points was modified to provide a more conservative estimate of these emissions.
 - Impacts from mobile source cumbustive emissions were evaluated in addition to stationary sources.
2. The net results of the foregoing revisions to the original ATC permit application were to reduce projected NO_x emissions from electrical power generation sources, since propane is a cleaner burning fuel with lower hydrocarbons and particulates. While estimated potential fugitive particulate emissions would be increased, the greater control efficiency achievable with baghouses would effectively mitigate ore processing emissions. The following sections summarize the information provided in the revised ATC permit application that is currently being reviewed by the APCD.

3.2.3.2 Changes in Potential Environmental Impacts

1. The revisions to the Castle Mountain Project ATC permit application required the modification of those Draft EIS/EIR tables and figures which summarized air quality impacts associated with the Proposed Action. The revised tables and figures are included in this section. Table 3.2, Castle Mountain Project Air Pollutant Emissions Inventory, summarizes anticipated air contaminant emissions from the Proposed Action and reflects the modifications in project emissions discussed above. The air quality modeling results are summarized in Table 3.3, Castle Mountain Project Air Quality Modeling Results.
2. In general, the revisions to the Castle Mountain Project ATC permit application produced only a slight increase in calculated 24-hour (45.1 to 45.3 $\mu\text{g}/\text{m}^3$) and annual average (21.7 to 22.1 $\mu\text{g}/\text{m}^3$) downwind concentrations of PM₁₀ over those which were originally presented in the Draft EIS/EIR (see Figures 3.9 and 3.10, PM₁₀ Impact Contours from Project-Related

TABLE 3.2
CASTLE MOUNTAIN PROJECT
AIR POLLUTANT EMISSIONS INVENTORY

SOURCE	EMISSION RATES											
	POUNDS PER DAY (PEAK)						TOTAL TONS PER YEAR					
	ROC	NO _x	SO ₂	CO	PM ₁₀ Combustive	PM ₁₀ Fugitive Dust	ROC	NO _x	SO ₂	CO	PM ₁₀ Combustive	PM ₁₀ Fugitive Dust
Propane Powered Generators	235.0	352.5	0.5	587.4	2.3	--	42.9	64.3	0.1	107.2	0.4	--
Propane Fired Equipment	0.9	17.1	0.0	3.5	0.3	--	0.2	3.1	0.0	0.6	0.1	--
Mobile Equipment	81.9	2,459.8	216.5	455.5	76.3	--	13.0	386.9	34.1	71.7	12.0	--
Diesel Storage and Transfer Emissions	0.4						0.1					
Material Removal	--	--	--	--	--	84.7	--	--	--	--	--	12.9
Haul Road Travel	--	--	--	--	--	33.9	--	--	--	--	--	5.1
Dumping	--	--	--	--	--	29.0	--	--	--	--	--	4.4
Ore Processing	--	--	--	--	--	142.7	--	--	--	--	--	19.5
Conveyor Transfer Points	--	--	--	--	--	46.0	--	--	--	--	--	5.3
Silos Material Delivery and Use	--	--	--	--	--	0.2	--	--	--	--	--	<.1
Wind Erosion	--	--	--	--	--	11.1	--	--	--	--	--	2.0
TOTAL EMISSIONS	318.2	2,829.4	217.0	1,046.4	78.9	347.6	56.1	454.3	34.2	179.5	12.5	49.2

Source: Castle Mountain Project, Revised Authority to Construct Permit Application, Science Applications International Corporation 1989.

TABLE 3.3
CASTLE MOUNTAIN PROJECT
AIR QUALITY MODELING RESULTS

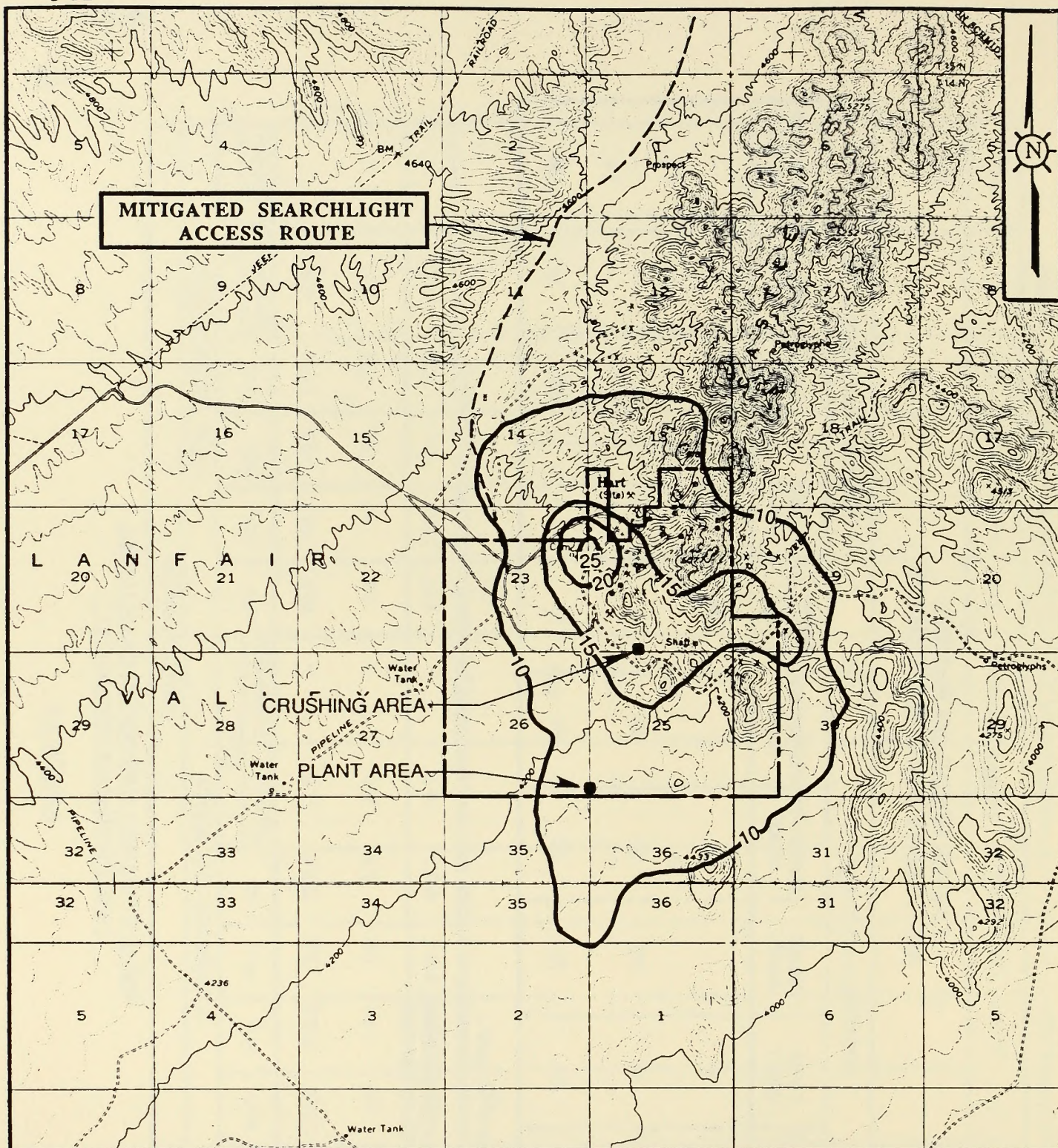
AVERAGING PERIOD	FUGITIVE DUST (PM ₁₀)					COMBUSTIVE EMISSIONS (NO ₂)				
	CONCENTRATION ⁽¹⁾ (µg/m ³)	CAAQS (µg/m ³)	NAAQS (µg/m ³)	PERCENT OF CAAQS	PERCENT OF NAAQS	CONCENTRATION ⁽²⁾ (µg/m ³)	CAAQS (µg/m ³)	NAAQS (µg/m ³)	PERCENT OF CAAQS	PERCENT OF NAAQS
1 Hour	--	--	--	--	--	230	470	--	49	--
24 Hours	45.3	50	150	91	30	--	--	--	--	--
Annual	22.1	30	50	74	44	35	--	100	--	35

(1) Includes background concentration of 18 $\mu\text{g}/\text{m}^3$.

(2) Includes a maximum 1-hour background concentration of 3 $\mu\text{g}/\text{m}^3$ and a maximum annual background concentration of 11 $\mu\text{g}/\text{m}^3$.

CAAQS: California Ambient Air Quality Standards.

NAAQS: National Ambient Air Quality Standards.



CONTOUR INTERVAL: 40 FEET

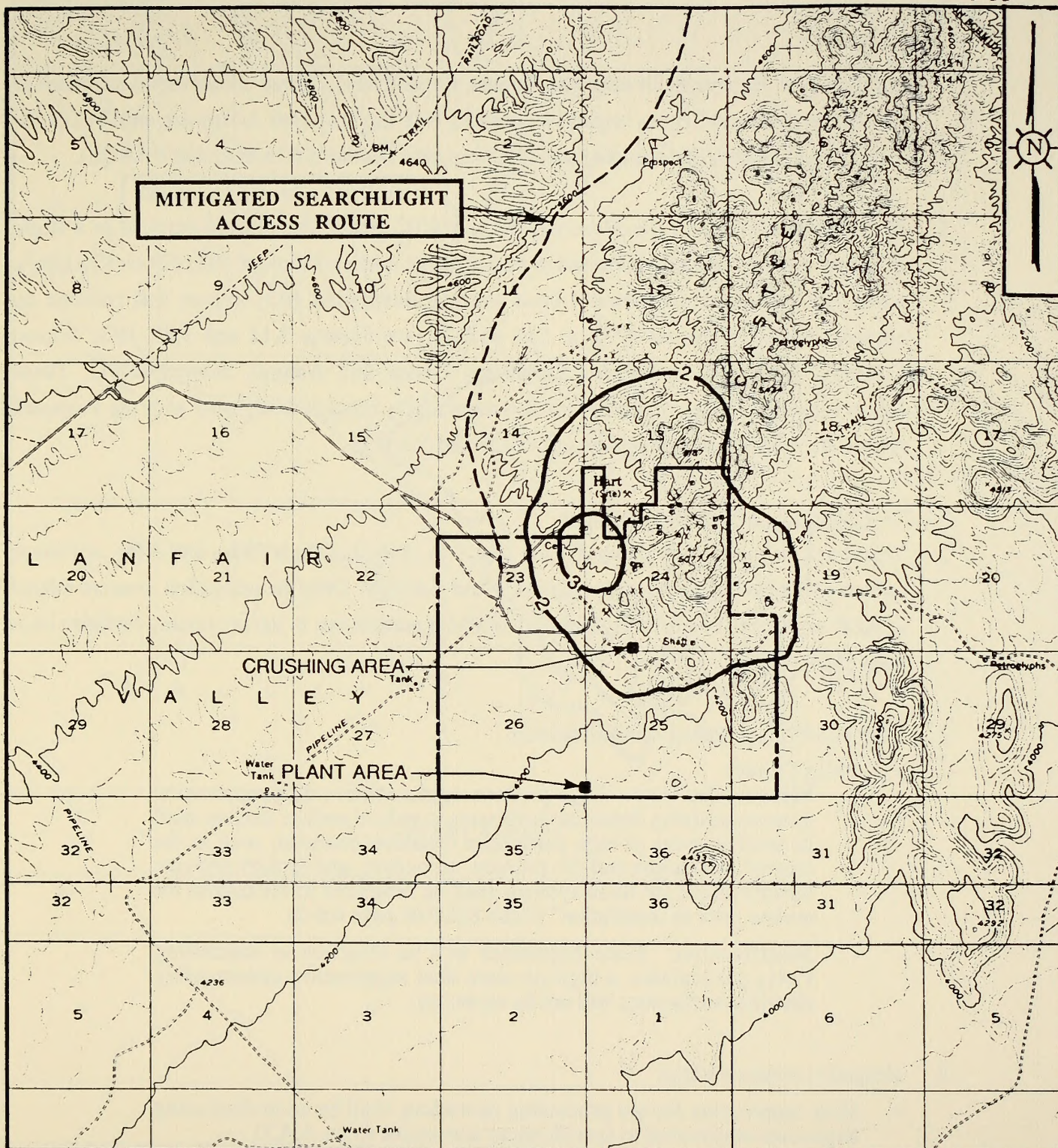
0 500 1000 FEET
SCALE

LEGEND

- SITE BOUNDARY
- 20— IMPACT CONCENTRATION

REFERENCE: 15 MINUTE U.S.G.S. TOPOGRAPHIC MAPS OF
HOMER MTN., CALIFORNIA AND SEARCHLIGHT,
NEVADA-CALIFORNIA
DATED: 1956 AND 1959 RESPECTIVELY

FIGURE 3.9
PM₁₀ IMPACT CONTOURS ($\mu\text{g}/\text{m}^3$)
(24-HOUR)
FROM PROJECT-RELATED
FUGITIVE DUST EMISSIONS
CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.



CONTOUR INTERVAL: 40 FEET

LEGEND

- SITE BOUNDARY
- IMPACT CONCENTRATION

0 500 1000 FEET

SCALE

REFERENCE: 15 MINUTE U.S.G.S. TOPOGRAPHIC MAPS OF
HOMER MTN., CALIFORNIA AND SEARCHLIGHT,
NEVADA-CALIFORNIA
DATED: 1956 AND 1959 RESPECTIVELY

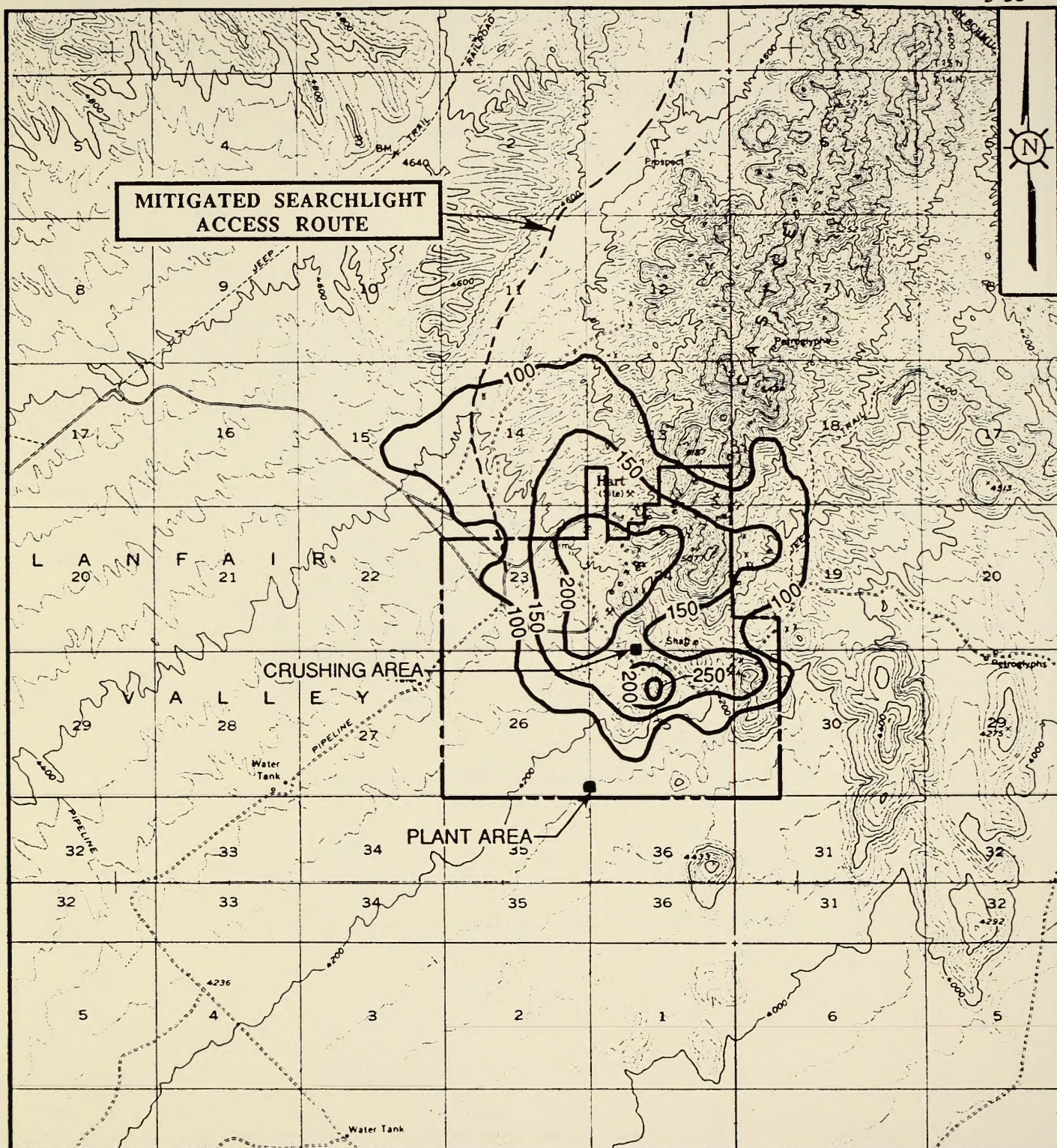
FIGURE 3.10
PM₁₀ IMPACT CONTOURS ($\mu\text{g}/\text{m}^3$)
(ANNUAL)
FROM PROJECT-RELATED
FUGITIVE DUST EMISSIONS
CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

Fugitive Dust Emissions 24-hour and Annual, respectively). These conservative estimates of maximum downwind PM₁₀ impacts associated with the Proposed Action are well below the respective California and National ambient air quality standards (CAAQS and NAAQS).

3. Modifications to the Castle Mountain Project ATC permit application resulted in a slight increase in the estimated maximum annual average concentration of NO₂ (29 to 35 µg/m³), while the estimated maximum 1-hour average downwind NO₂ impact was reduced by approximately 15 percent (272 to 230 µg/m³) (see Figures 3.11 and 3.12, NO_x Impact Contours from Project-Related Emissions 1-hour and Annual, respectively). These conservative estimates of maximum downwind NO₂ impacts associated with the Proposed Action are well below the respective CAAQS and NAAQS.

3.2.3.3 Changes in Mitigation Measures

1. The changes in air quality impacts are minor in scale and both PM₁₀ and NO₂ emissions remain well below their respective CAAQS and NAAQS. Only the mitigation measure related to ADS systems to control the generation of PM₁₀ particulates in the processing facilities have been changed.
2. Draft EIS/EIR mitigation measure deleted:
 - PM₁₀ Control
 - **Measure Deleted:** "High pressure agglomerative dust suppression systems utilizing chemical surfactants to reduce surface tension shall be used in areas of high particulate emission potential, such as the crusher discharges and the primary, secondary, and tertiary screens. Specifications for these systems shall be submitted to the district for review prior to installation" (Draft EIS/EIR page 6.6-2).
 - **Justification:** Since baghouses will be effective in controlling PM₁₀ particulates, a high pressure dust suppression system using chemical surfactants will not be necessary.
3. Mitigation measure added:
 - Dust suppression for ore processing operations shall be controlled using baghouses constructed to specifications acceptable to the APCD.



CONTOUR INTERVAL: 40 FEET

LEGEND

--- SITE BOUNDARY
 ————— IMPACT CONCENTRATION

A horizontal scale bar with tick marks at 0, 500, and 1000 FEET. The word "SCALE" is centered below the bar.

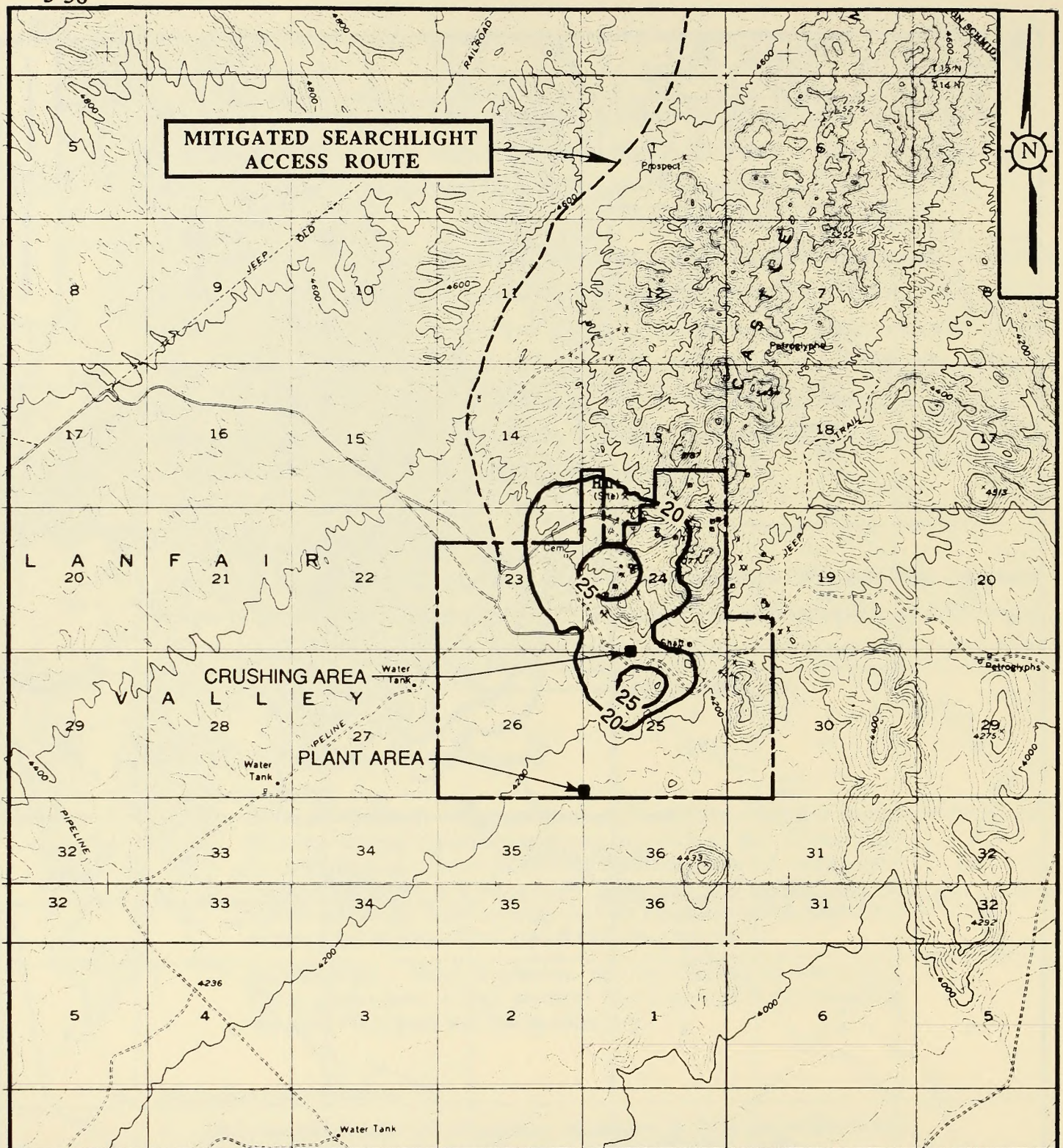
FIGURE 3.11

**NO₂ IMPACT CONTOURS (μg/m³)
(ONE-HOUR)
FROM PROJECT-RELATED EMISSIONS**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

REFERENCE: 15 MINUTE U.S.G.S. TOPOGRAPHIC MAPS OF
HOMER MTN., CALIFORNIA AND SEARCHLIGHT,
NEVADA-CALIFORNIA
DATED: 1956 AND 1959 RESPECTIVELY



CONTOUR INTERVAL: 40 FEET

0 500 1000 FEET
SCALE

LEGEND

- SITE BOUNDARY
 —25— IMPACT CONCENTRATION

REFERENCE: 15 MINUTE U.S.G.S. TOPOGRAPHIC MAPS OF
 HOMER MTN., CALIFORNIA AND SEARCHLIGHT,
 NEVADA-CALIFORNIA
 DATED: 1956 AND 1959 RESPECTIVELY

FIGURE 3.12
NO₂ IMPACT CONTOURS (μg/m³)
(ANNUAL)
FROM PROJECT-RELATED EMISSIONS

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

CHAPTER 4.0
ALTERNATIVES TO THE PROPOSED ACTION

4.0 ALTERNATIVES TO THE PROPOSED ACTION

4.1 INTRODUCTION

1. A range of alternatives to the Proposed Action were evaluated in the Draft EIS/EIR. Alternatives were evaluated, in accordance with NEPA and CEQA, to determine if a feasible alternative would reduce one or more potential environmental effect of the project as proposed. Alternatives investigated in the Draft EIS/EIR included:

- Proposed Action
- Alternative Mining and Processing Technologies
 - Alternative Mining Techniques
 - Alternative Overburden and Processed Ore Disposal
 - Alternate Gold Extraction Techniques
- Alternative Locations for Project Facilities
 - Mine Pits
 - Overburden Piles
 - Heap Leach Pads
 - Process Facilities and Solutions Ponds
- Alternative Water Supply
- Alternative Power Supply
- Ivanpah Access Route Alternative
- No Action Alternative

These alternatives were reviewed in the Draft EIS/EIR for potential feasibility and/or comparative environmental effects. Of the seven alternatives evaluated, it was determined that alternatives for mining and processing technologies, locations for project facilities, water supply and power supply were not technically or environmentally feasible. The Proposed Action and Ivanpah Access Route were found to be technically and environmentally feasible. In addition, the No Action Alternative was evaluated, as required by NEPA and CEQA. Based upon the environmental evaluations completed for the Draft EIS/EIR, the Proposed Action is determined to be the BLM preferred alternative.

2. Circulation of the Draft EIS/EIR resulted in additional alternatives being suggested by the reviewing agencies and public. These included:
 - Alternative Project Location Considerations
 - Alternative Project Sizes
 - Alternative Project Ore Processing Rates
 - Types of No Action Alternatives

These additional alternatives are identified and evaluated in this Supplement for the purpose of considering a broad range of alternatives in the spirit of NEPA and CEQA. Each alternative is

4.0 ALTERNATIVES TO THE PROPOSED ACTION

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These additional alternatives are identified and evaluated in this Supplement for the purpose of considering a broad range of alternatives in the spirit of NEPA and CEQA. Each alternative is

compared to the Proposed Action in terms of its potential unavoidable environmental consequences in Table 4.1, Proposed Action and Alternatives, Comparative Unavoidable Adverse Impacts. Based upon the evaluations completed in the Draft EIS/EIR, each of the potential impacts associated with the Proposed Action could be mitigated below a level of significance through regulatory requirements or measures incorporated in project operation and/or design, or would be positive. However, as noted in Draft EIS/EIR Section 7.0, Unavoidable Adverse Impacts, some unavoidable adverse impacts would still occur in the resource categories of water, vegetation, wildlife, air quality, visual, and land use. Table 4.1 therefore focuses on these unavoidable adverse impacts of the Proposed Action, and compares them to the impact that could occur for each alternative. Alternatives' impacts are noted as being "greater," "similar," or "less" than the Proposed Action. Supporting information is expressed quantitatively where possible, or qualitatively, as appropriate, and discussed in detail in its respective section of this chapter.

4.2 ALTERNATIVE PROJECT LOCATION CONSIDERATIONS

1. Alternative project locations are commonly discussed in environmental evaluations for purposes of comparing the environmental impacts of proceeding with a project as proposed, to the same project located elsewhere. However, as explained in the Draft EIS/EIR, and as is true of any mineral resource, the Castle Mountain gold deposits are geologically fixed in location. These deposits, in particular, are recognized within the mining industry as being a "world-class" property, and a rare discovery. The Proposed Action has been conceived and designed for development of these particular deposits, with their specific characteristics. An alternate site location for this particular development proposal is therefore not physically possible and could not feasibly achieve the objective of this project, which is to extract gold from this specific group of ore deposits.
2. An evaluation of alternate mining project locations where another ore deposit could be developed by the Applicant instead of at the Castle Mountain site also is not feasible. Locations for mining of valuable and rare mineral deposits are not selected from an array of sites, but are individually discovered after an often extensive and expensive exploration program. Gold has intrinsic value, in part, because it is rare and difficult to find. Consequently, when a valuable deposit is discovered, it is developed, rather than held for future use.

TABLE 4.1

**PROPOSED ACTION AND ALTERNATIVES,
COMPARATIVE UNAVOIDABLE ADVERSE IMPACTS**

RESOURCE CATEGORY	DRAFT EIS/EIR ALTERNATIVES		ADDITIONAL ALTERNATIVES				NO ACTION ALTERNATIVE
	PROPOSED ACTION	IVANPAH ACCESS ROUTE	REDUCED PROJECT	ENLARGED PROJECT	SLOWER PROCESSING	FASTER PROCESSING	
WATER RESOURCES							
1. Water Use	1. Impact: About 725 acre feet would be consumed annually (7,250 acre-feet for 10-year operation).	1. Similar Impact: About 7,250 acre feet would be consumed for the 10-year operation.	1. Less Impact: Total consumption would be reduced to about 3,625 acre-feet for the 5-year operation.	1. Greater Impact: Total consumption would be increased to about 10,875 acre-feet for the 15-year operation.	1. Greater Impact: Although daily water use would decrease to about 250 gpm, the 20-year project life would increase total consumption to about 8,050 acre-feet.	1. Similar Impact: Although daily water use would increase to about 625 gpm for the 7-year project life, total use would be about 6,700 acre feet.	1. No Impact
2. Potential Effect to Piute Spring	2. Impact: No impact is expected, based on the detailed analysis of Lanfair Valley aquifer volume, transmissivity, recharge, and distance to Piute Spring.	2. No Impact: Water consumption would be identical to the Proposed Action and is not expected to affect Piute Spring.	2. No Impact: Water consumption less than the Proposed Action would not be expected to affect Piute Spring.	2. No Impact: While the total amount of withdrawal would be 1.5 times greater than the Proposed Action, the impact to the Lanfair Valley aquifer would still be confined to the northeastern portion of the basin. No impact to Piute Spring would be expected.	2. No Impact: While the total amount of withdrawal would be about 1.1 times greater than the Proposed Action, the impact to the Lanfair Valley aquifer would still be confined to the northeastern portion of the basin. No impact to Piute Spring would be expected.	2. No Impact: Total water use would be reduced. As for the Proposed Action, no impact would be expected.	2. No Impact
VEGETATION							
1. Vegetation/Community Disturbance	1. Impact: About 930 acres of vegetation would be disturbed in the creosote bush scrub/Joshua tree woodland/desert grassland and blackbush scrub communities. Revegetation may take an extended time period for complete recovery.	1. Similar Impact: About 930 acres of vegetation would be disturbed in onsite communities and for access route improvements.	1. Less Impact: The area of onsite and access route vegetation disturbance would be reduced 40% to about 560 acres.	1. Greater Impact: About 1,070 acres of vegetation would be disturbed in onsite communities and for access route improvements (about a 15% increase).	1. Similar Impact: About 930 acres of vegetation would be disturbed in onsite communities and for access improvements.	1. Similar Impact: About 930 acres of vegetation would be disturbed in onsite communities and for access improvements.	1. No Impact
WILDLIFE							
1. Habitat Impact	1. Impact: About 930 acres of wildlife habitat would be disturbed. Onsite forage habitats available for use by the desert tortoise and special interest species such as bighorn sheep and raptors would be depleted in areas disturbed. Revegetation may take an extended period of time.	1. Similar Impact: About 930 acres of wildlife habitat would be disturbed.	1. Less Impact: About 560 acres of wildlife habitat would be disturbed.	1. Greater Impact: About 1,070 acres of wildlife habitat would be disturbed.	1. Similar Impact: About 930 acres of wildlife habitat would be disturbed.	1. Similar Impact: About 930 acres of wildlife habitat would be disturbed.	1. No Impact
2. Wildlife Impact	2. Impact: Daily project traffic from operations could affect wildlife. Noise in the vicinity of operations and vehicle traffic on access roads could result in wildlife fatalities for the 10-year life of the project.	2. Similar Impact: Daily traffic levels and noise duration would be the same as for the proposed action.	2. Less Impact: Daily traffic would be similar, but the duration would be reduced to 5 years. The risk of injury to wildlife would therefore be reduced. Noise duration would be reduced to 5 years.	2. Greater Impact: Daily traffic would be similar, but the duration would be increased to 15 years. The risk of injury to wildlife would therefore be extended by 5 years. Noise duration also would be extended to 15 years.	2. Greater Impact: Daily traffic would be similar, but the duration would be increased to 20 years. The risk of injury to wildlife would therefore be extended. Noise duration also would be increased to 20 years, but daily operating noise would be decreased, since less equipment would be used.	2. Similar Impact: Daily traffic would be similar, but the duration would be reduced to 7 years. The risk of injury to wildlife would therefore be decreased. Noise duration would be reduced to 7 years, but daily operating noise would be increased, since more equipment would be used.	2. No Impact
AIR QUALITY							
1. PM ₁₀ Particulates	1. Impact: Up to 427 pounds of particulates would be generated daily during the 10-year operational life of the project.	1. Similar Impact: Up to 427 pounds of particulates would be generated daily for the 10-year operational life.	1. Less Impact: Up to 427 pounds of particulates would be generated daily, for the 5-year project life.	1. Greater Impact: Up to 427 pounds of particulates would be generated daily for the 15-year project.	1. Greater Impact: Up to 232 pounds of particulates would be generated daily, but over a 20-year period.	1. Greater Impact: Up to 626 pounds of particulates would be generated daily for the 7-year project. PM ₁₀ concentrations could violate CAAQS unless additional mitigation measures were implemented.	1. No Impact
2. Process and Fuel Use Emissions (ROC, NO _x , SO ₂ , CO)	2. Impact: Daily combustion emissions would total up to 4,411 pounds during the 10-year operational life of the project.	2. Similar Impact: Up to 4,411 pounds of combustion emissions would be generated daily for the 10-year operational life.	2. Less Impact: Up to 4,411 pounds of combustion emissions would be generated daily for the 5-year project life.	2. Greater Impact: Up to 4,411 pounds of combustion emissions would be generated daily for the 15-year life of the project.	2. Greater Impact: Up to 2,205 pounds of combustion emissions would be generated daily, but over a 20-year period.	2. Greater Impact: Up to 5,734 pounds of combustion emissions would be generated daily for the 7-year life of the project.	2. No Impact
VISUAL RESOURCES							
1. Operational Activities	1. Impact: Project activities and lighting would be visible from unobstructed viewing locations in Lanfair Valley for the 10-year project life.	1. Similar Impact: Project activities and lighting would be visible for the 10-year operational life.	1. Less Impact: Project activities and lighting impacts would be reduced to a 5-year operating period.	1. Greater Impact: Project activities and lighting impacts would be increased to a 15-year operating period.	1. Greater Impact: While the amount of equipment and activity onsite would be reduced as a result of a decreased rate of ore processing, the duration of activities would be increased to a 20-year operating period.	1. Similar Impact: The onsite equipment and activities would be increased. However, the duration of activities would be reduced to a 7-year operating period.	1. No Impact
2. Site Topographic and Visibility Changes	2. Impact: Landform and color changes would modify the site's visual character. The sizes of the overburden pile and area of heap leach pads are based on processing about 30 million tons of ore.	2. Similar Impact: Processing of about 30 million tons of ore would change the landform and color of the site.	2. Less Impact: Ore processed would be reduced to 15 million tons. Two heap leach piles would be eliminated, and the overburden area would be reduced.	2. Greater Impact: Ore processed would be increased to 45 million tons. Heap leach piles and overburden area would be increased.	2. Similar Impact: Ore processing of about 30 million tons of ore would change the landform and color of the site.	2. Similar Impact: Processing of about 30 million tons of ore would change the landform and color of the site.	2. No Impact. Beneficial visual impact from project reclamation of clay pit disturbance would not be realized.
LAND USE							
1. Livestock Grazing Forage Reduction	1. Impact: The 930 acres of vegetation removed by project activities would reduce livestock forage by about 38 animal unit months (AUMs) in the Lanfair Valley grazing allotment.	1. Similar Impact: The 930 acres of disturbance would reduce available livestock forage by about 38 AUMs.	1. Less Impact: The 560 acres of disturbance would reduce available livestock forage by about 23 AUMs.	1. Greater Impact: The 1,070 acres of disturbance would reduce available livestock forage by about 43 AUMs.	1. Similar Impact: The 930 acres of disturbance would reduce available livestock forage by about 38 AUMs.	1. Similar Impact: The 930 acres of disturbance would reduce available livestock forage by about 38 AUMs.	1. No Impact. Beneficial wildlife habitat impacts from project reclamation of clay pit disturbance would not be realized.

EXPLANATION:

This table compares the anticipated unavoidable adverse impacts of each alternative project to those associated with the Proposed Action. The primary anticipated unavoidable effects of the Proposed Action are summarized for each environmental resource. Anticipated unavoidable effects of the alternatives are then compared to the effects of the Proposed Action as 'greater', 'similar', or 'less' impact. Where no unavoidable adverse environmental effect is expected, 'no impact' is shown. Supporting information is cited quantitatively where possible, or qualitatively, as appropriate.

As discussed in the Draft EIS/EIR (Section 7.0, Unavoidable Adverse Impacts), and based upon the regulatory requirements and mitigation measures that would be incorporated into the project design, most of the identified effects would be mitigable to a level of no significant impact. However, there would be some unavoidable adverse impacts to the resource categories listed above. Five additional resource categories are addressed in the Draft EIS/EIR (Geology, Cultural Resources, Environmental Health and Safety, Socioeconomics and Infrastructure), but are not discussed in this comparison, because they could be mitigated below a level of significance, or are considered to be positive.

3. While development procedures for mining projects are in some aspects similar to other industries, one key aspect sets mining projects apart from other industrial projects: the element of discovery of a valuable mineral deposit at a particular site invariably dictates a mining project's location. And, since that deposit is integral to the earth's surface, until it is mined, it cannot be moved to another location.
4. The complexities involved in mineral exploration and discovery are many. While discovery of other gold deposits does occur, such discovery can not be predicted. Engineering data for discovered mineral deposits is commonly proprietary information and therefore not available for review and evaluation by the public or other members of the mining industry. This means that, even if other locations for a similar mining project have been discovered, such information is not available for environmental analysis of "alternative project locations" in an environmental impact evaluation.
5. Even if such information on discovered alternative orebodies were available, it would not be reasonable to require their comparative environmental analysis since the Federal Mining and Minerals Policy Act of 1970 encourages exploration of mineral resources on public lands and extraction of all valuable deposits discovered because an economically sound mining industry is an integral part of a strong American economy. As long as the mining project sponsor avoids undue and unnecessary degradation of the environment as required by the regulations implementing the Federal Land Policy and Management Act of 1976 (FLPMA), it has a vested right to extract the orebody. On unpatented claims, the claim holder has no right to use the property for any purpose other than mining. Therefore, governmental denial of that right would constitute a taking of the claim holder's entire interest in the property, requiring compensation under the Fifth Amendment of the U.S. Constitution (see Section 4.5.3). Under such circumstances, the study of alternative locations would not be reasonable.

4.2.1 MINERAL EXPLORATION

1. This section has been prepared to explain some of the factors affecting mineral exploration, as an aid to understanding why evaluation of an alternative project location is not feasible for this type of mining project.
2. The discovery of a mineral deposit with economic potential is the goal of all exploration efforts. Guidelines for mineral exploration programs are usually quite broad during the initial

reconnaissance phases of exploration, becoming more focused and selective as specific targets are identified and prioritized. In designing an exploration program, the exploration manager is faced with several constraints:

- Mines can only be located where exploration success has been achieved. Exploration success, in turn, is restricted to relatively few unique areas.
- Evaluation of the economic potential of mineral prospects is usually based on limited data, in that the extent of the resource is hidden from view, buried beneath the surface of the earth. Because discovering economically viable mineral deposits is so very difficult and so uncommon, information on exploration activities are carefully guarded and proprietary secrets, kept in the strictest confidence by mining companies. This greatly limits the database for any exploration program.
- World competition in metal markets and the costs incurred in developing and operating mines essentially eliminate all but the better grade deposits from consideration. Since such deposits are rare and difficult to locate, alternatives capable of providing the same metals and equivalent profitability are limited.
- Successful exploration programs, in spite of the availability of sophisticated technology and an increasing body of geologic knowledge, continue to involve a substantial element of chance.

3. Statistically, it can be demonstrated that if 10 exploration targets are evaluated, each with a 10 percent likelihood of success, there is a 36 percent chance that all 10 will be failures. In reality, a 10 percent likelihood of success on an individual project is much too high. According to Dickerson (1984):

"A few rough success estimates have been compiled. These, coupled with off-the-record figures provided by practicing experts, seem to settle around the 100-to-1 level. That is, for the domestic minerals industry as a whole, for every 100 raw prospects of any type, tested in any fashion, only one will prove to be an orebody of any significant size. Substantial orebodies, i.e., one large enough to return the explorer's total exploration expenditures, as well as a profit, are much scarcer. This fact one may equate to 1 in 1,000 or 1 in 1,500."

Therefore, the possibility of finding a feasible alternative location for a gold mining project, even if only for comparative environmental purposes, is remote.

4. In the case of the Castle Mountain Project, the Applicant's discovery was fortunate. Three geologists, with more than 100 years of collective experience and familiarity with similar geologic settings, examined the site. They concluded that the geologic potential in the area was sufficiently promising to justify the cost of acquiring and exploring mining claims in the area. Following initial land acquisition, further onsite exploration confirmed the promise of the site and gave the Applicant the incentive to acquire additional mineral interests from third

parties on adjacent lands. In the exploration and evaluation of this site alone, the Applicant has spent in excess of \$15,000,000. There is no similar information available that indicates the presence of comparable mineral deposits in the region that could be studied for alternative locations.

4.3 ALTERNATIVE PROJECT SIZES

1. This section provides two alternative scenarios based on increasing or decreasing the total amount of material mined over the life of the mine, thereby resulting in either a larger or a smaller project. The discussions provide a basis for comparing the potential environmental impacts that could result from a change in project size as compared to the Proposed Action. A discussion on the general socioeconomic effects is included, since project design and economic viability are integrally related. As proposed, the project is designed to mine a cluster of ore bodies from three pits with specific sizes and shapes. The pit designs have been optimized, based on engineering and economic parameters to maximize the percentage of the resource extracted. Arbitrary changes to a larger or smaller design, therefore, would not provide for the most efficient recovery of the mineral resource unless unforeseen technological advancements or unforeseen economic conditions occurred.
2. For purposes of analysis, the following assumptions have been made for the two alternatives:
 - **Reduced Project Alternative:** Total tons of ore and overburden would be decreased by 50 percent. The rate of mining and processing would be the same as for the Proposed Action.
 - **Enlarged Project Alternative:** Total tons of ore and overburden would be increased by 50 percent. The rate of mining and processing would be the same as for the Proposed Action.
3. Changes in the potential environmental impacts from either of these alternatives would be primarily related to the reduced or extended mine life and the change in area of disturbance. Annual operating requirements such as manpower, traffic, water, supplies, and utilities would be the same as for the Proposed Action, for the life of the alternative. However, total (mine life) consumption factors would vary. These issues are specifically addressed for each alternative in the following sections.

4.3.1 REDUCED PROJECT ALTERNATIVE

4.3.1.1 Site Plan and Major Project Components

1. Reducing the size of the Castle Mountain Project by 50 percent would result in the following parameters:

- Total ore processed: 15 million tons
- Overburden mined: 30 million tons
- Annual ore processed: 3 million tons

The reduction in ore and overburden volumes mined would reduce the project life from ten to about five years. It is estimated that personnel requirements would be similar to the Proposed Action (about 150 workers).

2. As shown in Figure 4.1, Reduced Project Alternative Site Plan, the total acreage disturbed would be reduced to about 560 acres, an area about 40 percent smaller than the Proposed Action. This acreage reduction would be primarily due to elimination of the Oro Belle pit and a smaller Lesley Ann/Jumbo Pit, reduced overburden area, and elimination of some of the heap leach pad area.

4.3.1.2 Utilities, Ancillary Structures, Equipment, and Supplies

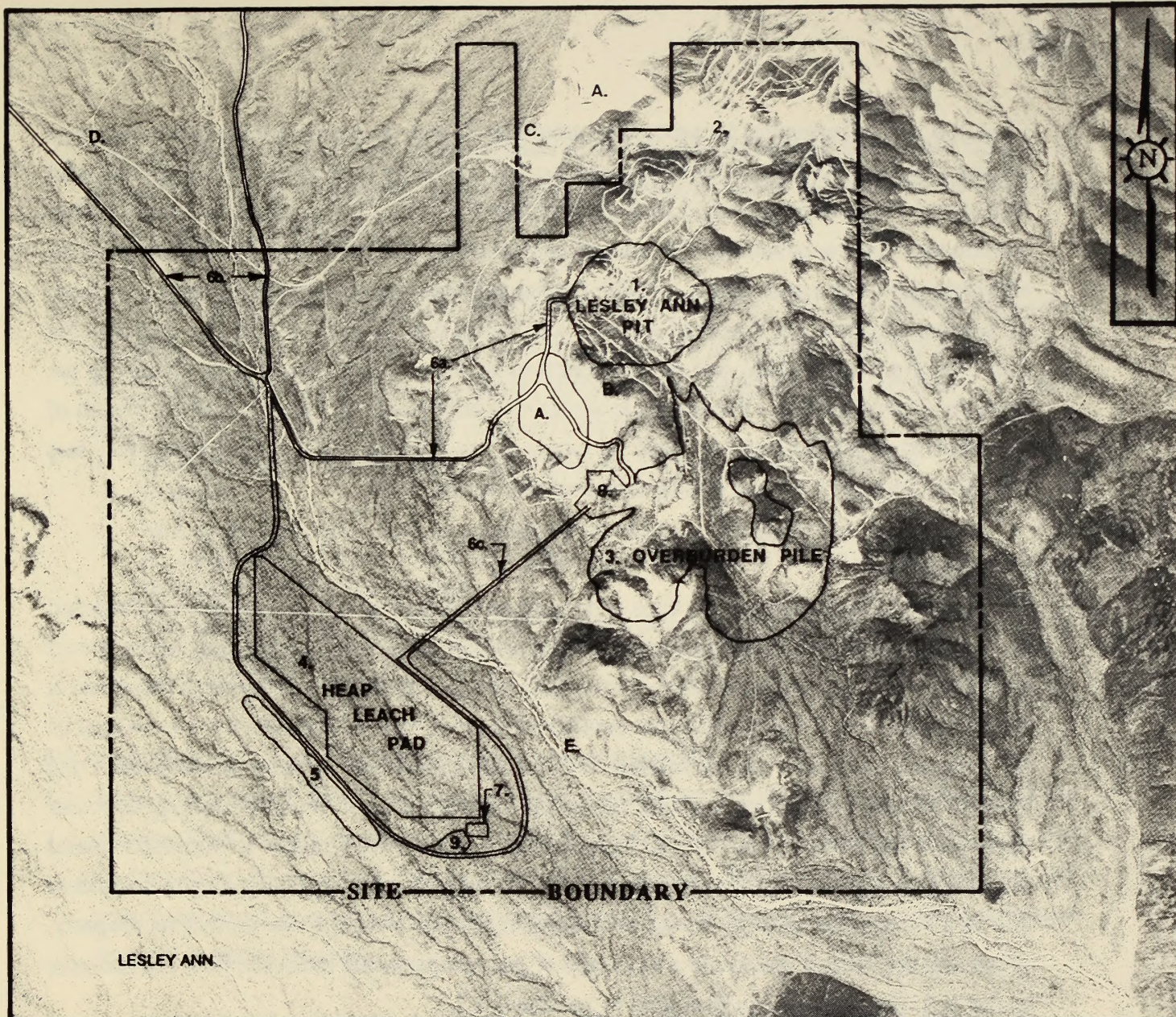
1. Annual demand for water, power and supplies would not be reduced during the life of the project. However, total consumption would be about one-half of that required for the Proposed Action as less ore would be processed. The need for mine equipment and structures would be similar to the Proposed Action, but the period of use would be reduced to about five years.

4.3.1.3 Project Traffic and Site Access

1. Access requirements and project traffic (about 108 ADT) would not be expected to change substantially with the reduced project, but would be limited to the five year project life.

4.3.1.4 Environmental Impact

1. Anticipated unavoidable adverse environmental effects of the Reduced Project are shown in Table 4.1. The table shows that some degree of impact reduction would occur in all of the resource categories affected.



MAJOR FACILITIES SUMMARY

ONSITE FACILITY	ACREAGE
1. LESLEY ANN PIT	90
2. ORO BELLE PIT	0
3. OVERBURDEN PILE	194
4. HEAP LEACH PADS	146
5. SOIL STORAGE	40
6. ROADS	30
a. HAUL ROADS	
b. ACCESS ROADS	
c. CONVEYORS/HAUL ROADS	
7. SOLUTION STORAGE	5
a. PREGNANT AND INTERMEDIATE	
b. PREGNANT, INTERMEDIATE AND BARREN	
8. CRUSHING AREA	10
9. PROCESSING PLANT AREA	5
PROCESS BUILDING, ADMINISTRATION	
BUILDING, PARKING, WAREHOUSING	
OFFSITE ACCESS	
ACCESS ROAD IMPROVEMENTS	40
TOTAL	560

SITE FEATURES

- A. CLAY PIT
- B. BIG CHIEF HILL
- C. HART (TOWNSITE)
- D. HART MINE ROAD
- E. DRAINAGE WASH

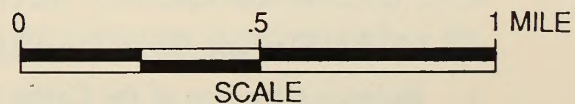


FIGURE 4.1

REDUCED PROJECT ALTERNATIVE SITE PLAN

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

2. Overall water consumption for processing would be 50 percent less than the amount necessary for the Proposed Action, since 50 percent less ore would be processed. However, the total reduction in consumption would be somewhat less because of the amounts necessary during construction and reclamation. The area of land disturbance would be about 560 acres so the affected vegetation communities, wildlife habitat and livestock grazing forage would be about 40 percent less than the Proposed Action. The reduced project life would also decrease the duration of potential traffic and noise impacts to wildlife. There would be no change in the daily air quality impacts. The impact to visual resources would be reduced, both as a result of the duration of visible activities, and the extent of topographic and color changes, since less ore would be processed, and less land disturbance would occur.

4.3.1.5 Discussion

1. The Reduced Project Alternative does offer some environmental advantages over the Proposed Action. However, this alternative would leave untapped the highest grade ore, which occurs near the bottom of the Jumbo South/Lesley Ann pit. Consequently, a 50 percent reduction in total tonnage mined would mean that considerably more than 50 percent of the ore would be left unprocessed below the pit bottom. This would defeat the purposes of the project and Federal mining law and policy, that encourage development of valuable mineral deposits. Moreover, the Mining Law of 1872 grants that a person who makes a valuable mineral discovery the right to fully develop the orebody. To require a mining claimant to develop only half of a recognized orebody would be tantamount to depriving the claimant of its property, subjecting the Federal government to a claim of just compensation under the Fifth Amendment to the U.S. Constitution, as discussed in Section 4.5.3.
2. Given the clearly articulated Federal policy of encouraging mineral exploration and development on public lands consistent with all applicable laws including, but not limited to, environmental statutes, developing only one-half of the known orebody is not a feasible alternative.

4.3.2 ENLARGED PROJECT ALTERNATIVE

4.3.2.1 Site Plan and Major Project Components

1. Enlarging the size of the Castle Mountain Project by 50 percent would result in the following parameters:
 - Total ore processed: 45 million tons
 - Overburden mined: 90 million tons
 - Annual ore processed: 3 million tons

The increase in ore and overburden volumes mined would increase the project life from 10 to about 15 years. It is estimated that personnel requirements would be similar to the Proposed Action (about 150 workers).

2. As shown in Figure 4.2, Enlarged Project Alternative Site Plan, the total acreage disturbed would be increased to about 1,070 acres, an approximately 15 percent greater area than for the Proposed Action. The reasons that mining and processing of 50 percent more material would result in only a 15 percent increase in project area include:

- Mine pit sizes would not significantly increase in area, but would increase in depth.
- The overburden pile could be extended at its thickest margin so that only an additional 50 acres would be needed to accommodate a 50 percent increase in overburden tonnage.
- The heap leach pads designed for the Proposed Action could be stacked to accommodate most of the additional ore, so that only about 40 additional acres would be required.

4.3.2.2 Utilities, Ancillary Structures, Equipment, and Supplies

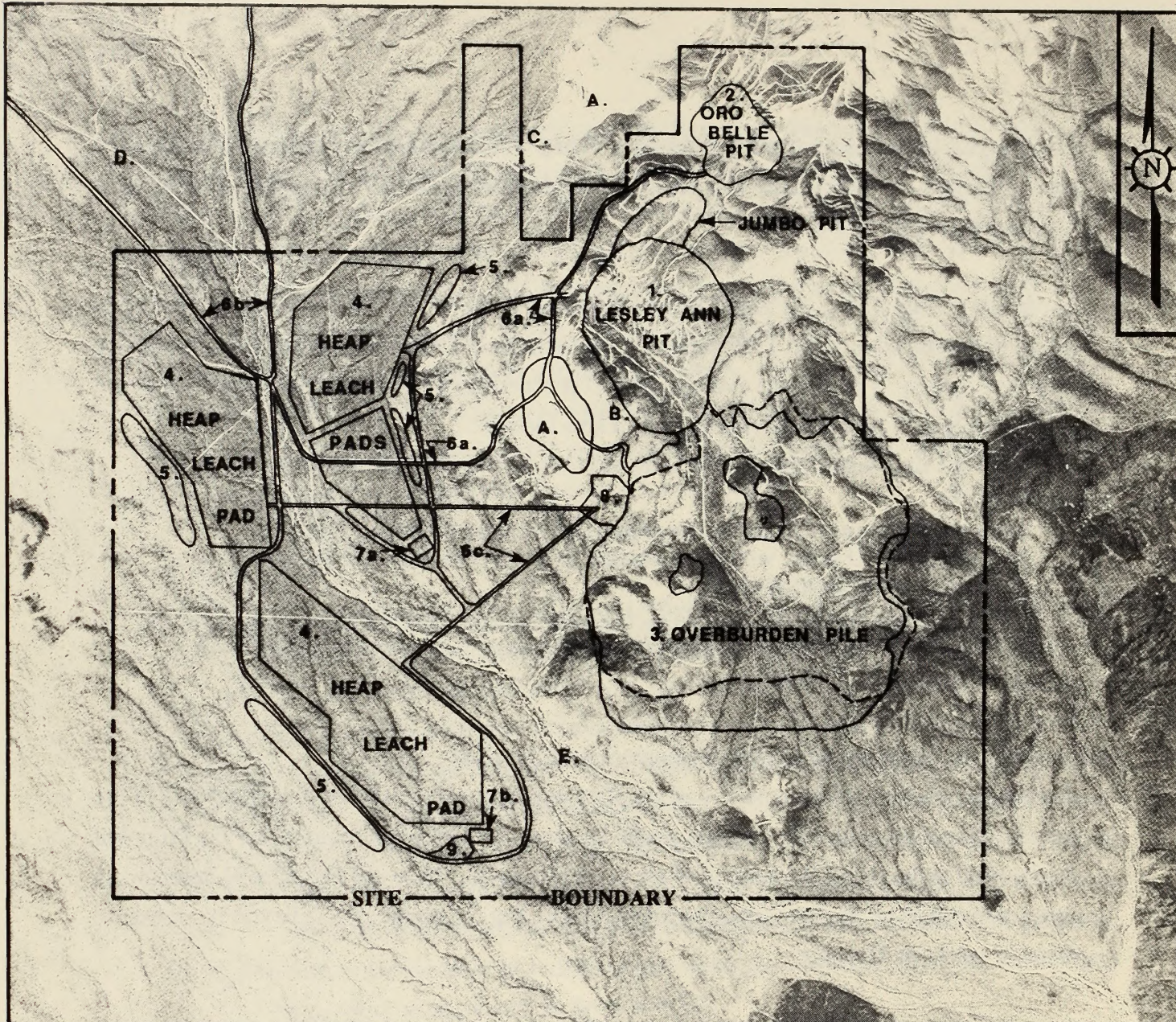
1. Annual demand for water, power, and supplies would not be increased during the life of the project. However, total consumption would be about 1.5 times that required for the Proposed Action, due to the increased amount of ore to be processed. The need for mine equipment and structures would be similar to the Proposed Action, but the period of use would be increased from 10 to about 15 years.

4.3.2.3 Project Traffic and Site Access

1. Access requirements and project traffic (about 108 ADT) would not be expected to change substantially with the Enlarged Project Alternative, but would be extended to the 15-year project life.

4.3.2.4 Environmental Impact

1. Anticipated unavoidable adverse environmental effects of the Enlarged Project Alternative are shown in Table 4.1. The table shows that there would be some increase impact on each of the resource categories affected.
2. Water consumption would be 50 percent greater than for the Proposed Action (about 10,875 acre-feet), since 50 percent more ore would be processed. However, no impact to Piute



MAJOR FACILITIES SUMMARY

ONSITE FACILITY	ACREAGE
1. LESLEY ANN PIT	140
2. ORO BELLE PIT	35
3. OVERBURDEN PILE	355*
4. HEAP LEACH PADS	387
5. SOIL STORAGE	55
6. ROADS	30
a. HAUL ROADS	
b. ACCESS ROADS	
c. CONVEYORS/HAUL ROADS	
7. SOLUTION STORAGE	15
a. PREGNANT AND INTERMEDIATE	
b. PREGNANT, INTERMEDIATE AND BARREN	
8. CRUSHING AREA	10
9. PROCESSING PLANT AREA PROCESS BUILDING, ADMINISTRATION BUILDING, PARKING, WAREHOUSING	5
OFFSITE ACCESS	
ACCESS ROAD IMPROVEMENTS	40
TOTAL	1072

SITE FEATURES

- A. CLAY PIT
- B. BIG CHIEF HILL
- C. HART (TOWNSITE)
- D. HART MINE ROAD
- E. DRAINAGE WASH

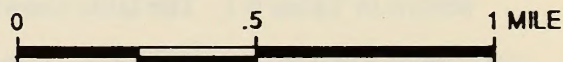


FIGURE 4.2

ENLARGED PROJECT ALTERNATIVE SITE PLAN

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

* 318 ACRES IF THE ADDITIONAL OVERBURDEN IS STACKED ON TOP OF THE ORIGINAL SOUTH OVERBURDEN SITE (DASHED LINE)

Spring would be expected, based on the same principles as described for the Proposed Action in the Draft EIS/EIR. A simple volume calculation in relation to the overall area of the Lanfair Valley aquifer would indicate that the maximum effect that could be realized would be less than 1/100th of the existing hydraulic head pressure at the spring⁽¹⁾. Ground water modeling calculations performed for the Draft EIS/EIR show that the effect would actually be much smaller than this conservative estimate because of distance, transmissivity, and recharge characteristics of the Lanfair Valley aquifer. Based on these factors, it is concluded that there would be no noticeable effect on Piute Spring.

3. The area of land disturbance would increase to about 1,070 acres, so the vegetation communities, wildlife habitat, and livestock grazing forage affected would be about 15 percent greater than for the Proposed Action. The extended project life would also increase the duration of potential traffic and noise impacts to wildlife. Since the rate of ore processing would be the same as for the Proposed Action, there would be no change to daily air quality impacts. The impact to visual resources would be increased primarily as a result of the duration of visible activities. In addition, larger leach pad and overburden piles would increase the overall topographic and color changes compared to the Proposed Action.

4.3.2.5 Discussion

1. The enlarged project alternative offers no environmental advantages over the Proposed Action. In addition, pit designs for the Proposed Action, as described in the Draft EIS/EIR, are based on current economic parameters. Ore material beyond these pit limits does not have sufficient value at the prevailing gold price to be mined economically. This alternative could therefore only economically succeed if one or more of the following occurred:
 - Exploration resulted in the discovery of additional ore reserves.
 - Unforeseen economic conditions significantly increased the price of gold (to approximately \$600 per ounce) for an extended period of time.
 - Improved mining and processing efficiencies or recoveries resulted in favorable economics for the treatment of lower grade ore.

Therefore, the Enlarged Project Alternative is not currently realistic or feasible.

(1) Based on a 0.75 foot reduction in the potentiometric surface, which is currently 80 feet higher than the spring outlet.

4.4 ALTERNATIVE ORE PROCESSING RATES

1. This section provides two alternative projects based upon decreasing or increasing the planned ore processing rate from the three million tons per year of the Proposed Action, resulting in either a slower or faster project operating rate. The discussions provide a basis for comparing of the potential environmental impacts that could result from a change in project duration compared to the Proposed Action. A discussion on the general socioeconomic effect to the project is included, since the rate of processing is related to the project's economic viability.
2. For purposes of analysis, the following assumptions are made regarding processing rates for the two alternatives:
 - **Slower Processing Alternative:** Total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be decreased by 50 percent, thereby increasing the life of the project to about 20 years.
 - **Faster Processing Alternative:** Total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be increased by 50 percent, thereby decreasing the life of the project to about seven years.
3. Since the areas of disturbance for those alternatives should be the same as for the Proposed Action, the change in environmental impact is related to the duration of activities and consumptive uses associated with project operation. These issues are specifically addressed for each alternative in the following sections.

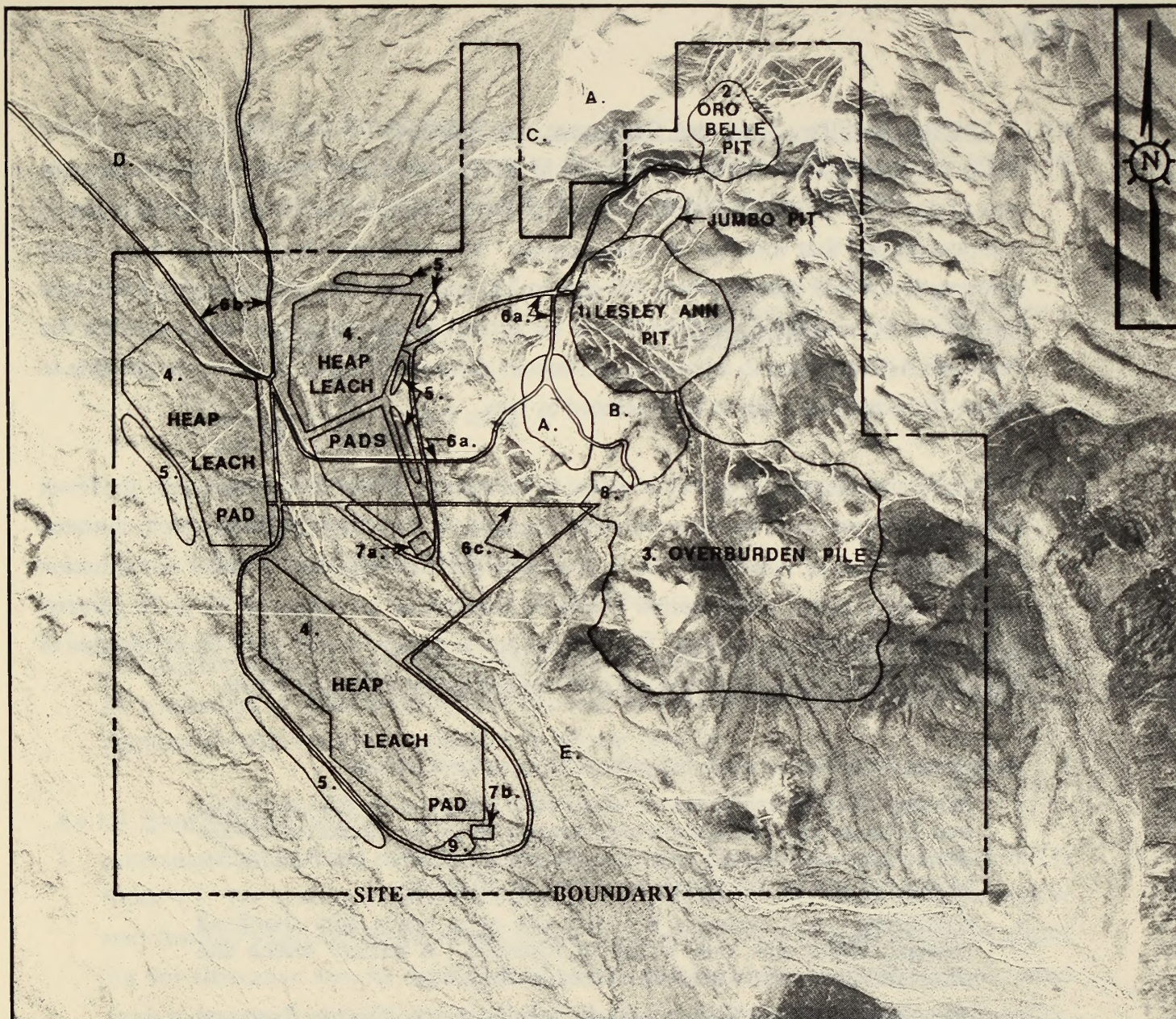
4.4.1 SLOWER PROCESSING ALTERNATIVE

4.4.1.1 Site Plan and Major Project Components

1. A 50 percent slower rate of processing the ore would result in the following parameters:
 - Total Ore processed: 30 million tons
 - Overburden mined: 60 million tons
 - Annual ore processed: 1.5 million tons

The slower rate of ore processing would increase the project life to about 20 years. It is estimated that personnel requirements would be reduced from 150 to about 120 workers.

2. Since the same total amount of ore and overburden would be processed as for the Proposed Action, the site plan would be identical, as shown in Figure 4.3, Slower or Faster Processing Alternatives Site Plan.



MAJOR FACILITIES SUMMARY

ONSITE FACILITY	ACREAGE
1. LESLEY ANN/JUMBO PITS	100
2. ORO BELLE PIT	35
3. OVERBURDEN PILE	300
4. HEAP LEACH PADS	330
5. SOIL STORAGE	70
6. ROADS	30
a. HAUL ROADS	
b. ACCESS ROADS	
c. CONVEYORS/HAUL ROADS	
7. SOLUTION STORAGE	10
a. PREGNANT AND INTERMEDIATE	
b. PREGNANT, INTERMEDIATE AND BARREN	
8. CRUSHING AREA	10
9. PROCESSING PLANT AREA	5
PROCESS BUILDING, ADMINISTRATION	
BUILDING, PARKING, WAREHOUSING	

OFFSITE ACCESS

ACCESS ROAD IMPROVEMENTS	40
TOTAL	930

SITE FEATURES

- A. CLAY PIT
- B. BIG CHIEF HILL
- C. HART (TOWNSITE)
- D. HART MINE ROAD
- E. DRAINAGE WASH

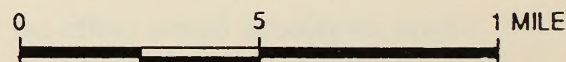


FIGURE 4.3

SLOWER OR FASTER PROCESSING ALTERNATIVES SITE PLAN

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

NOTE : SINCE TOTAL ORE AND OVERBURDEN FOR THESE ALTERNATIVES WOULD BE THE SAME AS FOR THE PROPOSED ACTION, THE SITE PLAN IS IDENTICAL.

4.4.1.2 Utilities, Ancillary Structures, Equipment, and Supplies

1. Water requirements for ore processing would decrease on a daily basis, but would increase overall due to the extended project duration (primarily for dust control and make-up water to compensate for that lost due to evaporation). It is estimated that average daily water consumption would decrease from 450 gpm to 250 gpm; however, approximately 8,050 acre feet would be consumed over the life of the project (about 10 percent more than for the Proposed Action). Due to a lower instantaneous demand for water, it should be possible to reduce the number of wells to be developed by two.
2. The major consumption of power is related to the number of tons of ore processed: the fewer tons processed per hour, the fewer kilowatts consumed. Ancillary facilities, which, consume power regardless of how much ore is processed per hour represent a minor consumption source. Daily power consumption would be reduced by an estimated 40 to 50 percent, compared to the Proposed Action. The reduced power demand would allow the elimination of one, possibly two of the six generating units needed for the Proposed Action.
3. Anticipated reductions in mine and processing equipment include:
 - **Mining** - Mining operations are expected to remain at six days per week, two shifts per day. Equipment requirements would be reduced, due to the decreased production requirements, primarily in loaders and haul trucks. Most other support equipment would still be necessary.
 - **Crushing** - It is probable that only one extra heavy duty shorthead crusher, rather than two, would be installed. A tertiary screen and associated conveyors would most likely be eliminated.
 - **Processing** - For a 100-day leach cycle (also assumed for the Proposed Action in the Draft EIS/EIR), the area for leach solution coverage would be reduced from that required for the Proposed Action. As a result, slightly smaller carbon columns would be required. Less carbon would be advanced on a daily basis, so a smaller regeneration kiln would be required. A slightly smaller processing facility area and solution storage needs would result.

4.4.1.3 Project Traffic and Site Access

1. Access requirements would be similar to the Proposed Action. Project traffic would be marginally lower than that estimated for the Proposed Action, as shown below.

<u>TRAFFIC SOURCE</u>	<u>ADT</u>	
	<u>SLOWER PROCESSING ALTERNATIVE</u>	<u>PROPOSED ACTION</u>
Mining/Processing staff using individual vehicles	56	56
Management staff	20	20
Bus/Van pool	19	20
Equipment/Supplies deliveries	<u>6</u>	<u>12</u>
TOTAL	101	108

The number of bus/van pool trips would not be expected to change by more than one, based on a reduction of about seven workers per shift for each of the four scheduled shifts. The duration of traffic would be extended to the 20-year mine life.

4.4.1.4 Environmental Impact

1. Anticipated unavoidable adverse environmental effects of the longer project are shown in Table 4.1. The table indicates that the project effects related to total (mine life) consumptive uses (such as water) and effects related to duration of impact (such as traffic) would be greater for this alternative than for the Proposed Action. Effects related to the site area disturbed (such as vegetation and wildlife habitat) would be indistinguishable from the Proposed Action.
2. Total (mine life) water consumption for the 20-year project would be increased about 10 percent (8,050 acre-feet) primarily due to dust control. However, no impact to Piute Spring would be expected, based on the same principles as described for the Proposed Action in the Draft EIS/EIR. A simple volume calculation in relation to the overall area of the Lanfair Valley aquifer would indicate that the maximum effect that could be realized would be about 1/160th of the existing hydraulic head pressure at the spring⁽¹⁾. Ground water modeling calculations performed for the Draft EIS/EIR show that the effect would actually be much

(1) Based on an 0.55 foot reduction in the potentiometric surface, which is currently 80 feet higher than the spring outlet.

smaller than this conservative estimate because of distance, transmissivity and recharge characteristics of the Lanfair Valley aquifer. Based on these factors, it is concluded that there would be no noticeable effect on Piute Spring.

3. The area of land disturbance would be about 930 acres, so the affected vegetation communities, wildlife habitat and livestock grazing forage affected would be about the same as for the Proposed Action. Daily air quality impacts would be reduced, as shown in Table 4.2, Comparative Air Quality Impacts, Slower and Faster Processing Alternatives, owing to the slower processing rate. The primary change to visual resources would be the 20-year duration of visible activities, compared to 10 years for the Proposed Action.

4.4.1.5 Discussion

1. Overall, the Slower Processing Alternative would result in similar or greater environmental impacts and, therefore, does not provide any environmental advantage over the Proposed Action.

4.4.2 FASTER PROCESSING ALTERNATIVE

4.4.2.1 Site Plan and Major Project Components

1. An increase in the rate of ore processing to 50 percent greater than the Proposed Action would result in the following parameters:
 - Total ore processed: 30 million tons
 - Overburden mined: 60 million tons
 - Annual ore processed: 4.5 million tons

The faster rate of ore processing would decrease the project life from 10 to about seven years. It is estimated that personnel requirements would be increased from 150 to about 180 workers.

2. Since this alternative would process the same total amount of ore and overburden as the Proposed Action, the site plan would be identical, as shown in Figure 4.3.

4.4.2.2 Utilities, Ancillary Structures, Equipment, and Supplies

1. Water requirements for processing ore would increase on a daily basis, but would decrease overall due to the reduced project duration (reduced period of dust control). It is estimated that the average daily water consumption would increase from 450 gpm to 625 gpm for the seven-year operating period. Compared to the Proposed Action, approximately 8 percent less water (about 6,700 acre-feet) would be used over the life of this alternative. As this total water use

TABLE 4.2

**COMPARATIVE AIR QUALITY IMPACTS,
SLOWER AND FASTER PROCESSING ALTERNATIVES**

SOURCE	PM ₁₀ EMISSION RATES (PEAK POUNDS PER DAY)		
	PROPOSED ACTION	SLOWER ⁽¹⁾ PROCESSING ALTERNATIVE	FASTER ⁽²⁾ PROCESSING ALTERNATIVE
Propane Powered Generators	2.3	1.2	3.5
Propane Fired Equipment	0.3	0.2	0.4
Mobile Equipment	76.3	38.2	101.7 ⁽³⁾
Fugitive Dust	347.6	192.0	520.0 ⁽³⁾
TOTAL	426.5	231.6	625.6 ⁽³⁾
	PM ₁₀ 24-HOUR CONCENTRATIONS (ug/m ³)		
Incremental Emissions	27	14.7	39.7 ⁽³⁾
Ambient Background Level	18.3	18.3	18.3
TOTAL	45.3	33.0	58.0 ⁽³⁾
PERCENT OF CAAQS	91	66	116 ⁽³⁾
PERCENT OF NAAQS	30	22	39

- (1) For the Slower Processing Alternative, it is assumed that the same sized mobile equipment would be used as for the Proposed Action, but only operated 10 hours daily (as compared to 20 hours for the Proposed Action). This would result in an approximate 50 percent reduction in daily emissions, as compared to the Proposed Action.
- (2) For the Faster Processing Alternative, the same hours of operation as for the Proposed Action would apply, however, additional and/or larger mobile equipment would be needed to support the increased rate of ore processing. It is assumed that this would result in an approximate 30 percent increase in mobile equipment emissions, and a 50 percent increase in fugitive dust.
- (3) Mitigation measures in addition to those required for the Proposed Action would be applied for the Faster Processing Alternative to reduce fugitive dust emissions to the point where CAAQS would not be violated.

would be less than for the Proposed Action, no impact on Piute Spring would be expected. However, at least one additional well would have to be developed in order to supply the increased instantaneous demand for water. Disturbance acreage for the additional well(s) would be less than one-half acre.

2. The major consumption of power is related to tons of ore processed: the more tons processed, the more kilowatts consumed. Ancillary facilities, however, consume power regardless of the amount of ore processed. Considering these factors, daily power consumption would be increased by an estimated 40 to 50 percent, compared to the Proposed Action, requiring the installation of two additional generating units, or fewer units of a larger size.
3. Anticipated increases in mine and processing equipment include:
 - **Mining** - Mining operations are expected to remain at six days per week at two shifts per day. Equipment requirements would increase due to the increased production requirements. Principal areas of increase are expected to be in loaders and haul trucks. Most other support equipment would remain unchanged.
 - **Crushing** - It is probable that another extra heavy duty shorthead crusher would be installed to augment crushing capacity. One additional tertiary screen and associated conveyors would also be installed.
 - **Processing** - For a 100-day leach cycle, (also assumed for the Proposed Action), the area for leach solution coverage would be increased from the Proposed Action. As a result, slightly larger carbon columns would be required. More carbon would be advanced on a daily basis, so a larger regeneration kiln also would be required. A slightly larger processing facility area and solution storage needs would result.

4.4.2.3 Project Traffic and Site Access

1. Access requirements and project traffic would increase marginally over those estimated for the Proposed Action. Total estimated weekday traffic is shown below:

<u>TRAFFIC SOURCE</u>	<u>ADT</u>	
	<u>FASTER PROCESSING ALTERNATIVE</u>	<u>PROPOSED ACTION</u>
Mining/Processing staff using individual vehicles	56	56
Management staff	20	20
Bus/Van pool	21	20
Equipment/Supplies deliveries	<u>18</u>	<u>12</u>
TOTAL	115	108

The number of bus/van pool trips would not be expected to change by more than one, based on an increase of about seven workers for each of the four schedule shifts. The duration of traffic would be reduced to the seven-year life of the mine.

4.4.2.4 Environmental Impact

1. Anticipated unavoidable adverse environmental effects of the Faster Processing Alternative are shown in Table 4.1. The table indicates that project effects related to total (mine life) consumptive uses (such as water) and effects related to duration of impact (such as traffic) would be somewhat less for this alternative than for the Proposed Action. Effects related to the site area disturbed (such as vegetation and wildlife habitat) would be the same as for the Proposed Action. The intensity of some impacts, such as noise and air quality, would increase.
2. The area of land disturbance would be about 930 acres, so the vegetation communities, wildlife habitat and livestock grazing forage affected would be about the same as for the Proposed Action. The impact to visual resources would be the reduced period (seven years) of visible activities, compared to the 10-year period of the Proposed Action.
3. The primary change in impact for this alternative would be increased daily air emissions, owing to the increase in mobile equipment, some additional processing equipment, and a 50 percent increase in the rate of ore processing. The result would be a nearly 50 percent increase in particulates (PM_{10}), from $27 \mu g/m^3$ to $39.7 \mu g/m^3$ as shown in Table 4.2, Comparative Air Quality Impacts, Slower and Faster Processing Alternatives. As indicated in the table, the total PM_{10} concentrations, including background, would be increased to $58 \mu g/m^3$. This would mean that the Faster Processing Alternative could result in a violation of California Ambient Air Quality Standards (CAAQS). Since this would not be acceptable, additional mitigation would be required to reduce particulates to a level acceptable to the San Bernardino County Air Pollution Control District in compliance with CAAQS. Such measures could include:
 - Use of larger haul trucks and loaders, and minimizing drop height during truck loading.
 - Enforcing of lower vehicle speeds on both general and haul roads.
 - Enclosing the truck dump hopper for the primary crusher, venting emissions to a baghouse.
 - Revegetation and/or chemical stabilization of overburden, low-grade and soil stockpiles and other miscellaneous disturbed areas.

Actual mitigation would be determined based upon a detailed modeling analyses that would be completed for the Authority to Construct application.

4. The extent of required additional mitigation would be determined from the air quality modeling for the exact reconfigured project. It is expected that the actual levels of particulate generation, which shall be monitored during operations, will be less than predicted because of the conservative approach used in quantifying projections. It is common practice in air quality analyses for mining applications to use a high degree of conservatism in both the emission factors and methodology used.

4.4.2.5 Discussion

1. The primary change associated with the Faster Processing Alternative would be the reduced operational period (about seven years) as compared to the Proposed Action (10 years). This would reduce the overall time period of environmental effects from traffic, noise, and visible operational activities.
2. When compared to the Proposed Action, the Faster Processing Alternative could result in a nominal reduction in the duration of operational effects. The Applicant believes, however, that there are factors associated with a seven-year project that would work against its effective implementation:
 - A shorter-lived project is less attractive in recruiting a stable, motivated workforce, and discourages employees who might otherwise wish to establish permanent homes and become involved in the affairs of the communities in which they reside.
 - The Faster Processing Alternative reduces the operational flexibility that is desirable for handling unanticipated problems in the mining and ore processing activities.
 - The higher capital investment needed for the Faster Processing Alternative increases the financial risk associated with the project, since it is more vulnerable to the unpredictableness of cyclical gold markets, given that a larger proportion of the total gold production might occur during the down side of the price cycle.

These practical and economic considerations would discourage selection of the Faster Processing Alternative from a socioeconomic standpoint.

4.5 TYPES OF NO ACTION ALTERNATIVES

4.5.1 INTRODUCTION

1. In compliance with NEPA and CEQA regulations, the Draft EIS/EIR considered the potential environmental consequences that would be associated with the No Action Alternative. However, it was noted that adoption of this alternative would generally be inconsistent with Federal and State policies encouraging mineral development and would deny the claimant his legal right to extract minerals on his claims. Further, adoption of the No Action Alternative under this project would not preclude future proposals being submitted for development of the Castle Mountain orebodies, by the Applicant or other parties.
2. Questions were asked as a result of the Draft EIS/EIR review regarding what legal means would be available to implement the No Action Alternative, should it be adopted by the decision makers. This section attempts to explain such project denial considerations and explore methods for site condemnation or withdrawal.
3. The Draft EIS/EIR also explained that, while the project objective is to develop the mineral resource by private industry, it is recognized that Federal government policies encourage private enterprise in the economic development of domestic mineral resources, to help assure satisfaction of the nation's industrial and security needs. This statement raised questions from some Draft EIS/EIR reviewers as to the need for gold and what alternative methods to provide it could be undertaken. A brief history of gold markets is therefore provided in this section, and alternative methods to acquire it are explored.

4.5.2 PROJECT DENIAL CONSIDERATIONS

1. The Mining Law of 1872, codified at 30 USC 22 *et seq.*, opened the public lands to exploration and development. The statute grants a person who discovers valuable mineral deposits the right to extract and sell these minerals. This policy has been reaffirmed most recently in two statutes, the Mining and Minerals Policy Act of 1970, and the National Materials and Minerals Policy, Research and Development Act of 1980. In 1970, Congress stressed that an "economically sound" mining industry was important for both economic and national security reasons. In the 1980 Act, Congress again noted the need to encourage mineral exploration, specifically recognizing that mineral exploration was compatible with maintaining a healthy natural environment.
2. FLPMA was intended to promote effective development of Federal lands administered by the BLM, requiring the BLM to inventory resources on such lands and to formulate

comprehensive plans for development of such resources. As part of this overall goal, FLPMA required the BLM to implement a policy of multiple uses for public lands, including studying roadless areas for possible inclusion in a wilderness preservation program. FLPMA Section 601(a) (43 USC 1781) created the California Desert Conservation Area (CDCA) which includes the East Mojave National Scenic Area (EMNSA) in which the proposed Castle Mountain project is located. The EMNSA Management Plan supports continued mineral development within the east Mojave desert as an extension of long-standing activity that has helped define the character of the area.

3. When a recently proposed amendment to the EMNSA would have modified the area's boundaries to remove four sections containing mining properties, because the claimants believed their inclusion within the EMNSA restricted or severely limited their use, BLM stated that the amendment was not necessary because, ". . . regulations on mineral exploration and development are not affected by the East Mojave National Scenic Area designation" (BLM, 1989).
4. The above discussion shows that national policy is favorably disposed toward maintaining a viable mining industry for the development of domestic mineral resources. Project denial would be inconsistent with public policy and is therefore not considered feasible.

4.5.3 SITE WITHDRAWAL OR CONDEMNATION

1. BLM withdrawal of the land in question to prevent development of its mineral resources is not permitted under present law. Under the Mining Law of 1872, the Secretary of the Interior has no discretionary authority to prohibit mining on public lands. That law, as well as FLPMA, contemplate multiple public use of the land in question, including mineral development (see Section 4.5.2). The 1980 CDCA Plan specifically permits mining on Class L lands, the class of lands on which the Proposed Action is located. Under existing law, the BLM has no discretion to withdraw such lands from development.
2. The United States is empowered to condemn private property for public use. Under the Fifth Amendment to the U.S. Constitution, the Federal government is required to pay just compensation, or the full and fair market value of the property thus acquired. If applied to the Castle Mountain project, this policy would require Congress to, first, find that the proposed mining site is required for a public use, and second, appropriate funds to compensate the Applicant for the property thus condemned.

3. There is no public use contemplated for the project site nor Congressional appropriation of funds and Congress has specifically approved the continued development of mineral resources in the EMNSA under appropriate Federal and State regulations. Accordingly, implementation of the site withdrawal or condemnation alternative is not considered feasible.

4.5.4 ALTERNATIVE METHODS OF ACQUIRING GOLD

4.5.4.1 Introduction

1. A discussion of alternative methods to acquire gold will be more informative if the reader has some familiarity with the history of gold's price movements, sources of supply, and markets. The purpose of this introduction is to provide a brief summary of that history, with emphasis on the American experience. This is followed by discussions of stockpile releases, recycling, purchasing abroad, and curtailing non-military uses as alternative methods of acquiring gold.

4.5.4.2 Brief History of Gold Use and Values

1. Gold has traditionally been a storehouse of value and a readily acceptable medium of exchange to settle financial obligations between individuals and nations. For centuries, it was the cornerstone of the world's monetary system, and it became inextricably linked to economic and military power. Spain's prominence as a major power in sixteenth century Europe was based on gold plundered from the Inca nation. Victorious monarchs in the wars that plagued Europe up through the mid-nineteenth century were usually those with the most gold in their treasuries, as they were best able to equip and field mercenary troops.
2. In 1717, Sir Isaac Newton, Master of the Mint, established a fixed price for gold, at 84.5 shillings per troy ounce. Except for brief periods of political uncertainty, the price remained at this level for 228 years, until the International Monetary Fund was established in 1944. It was shortly after America gained its independence that Alexander Hamilton proposed maintaining the dollar value of gold. The 1792 Mint Act established a Bimetallic Standard for U.S. currency. At the time, the Treasury held large stocks of silver, so the dollar was equated to 0.774 troy ounces of silver. The silver/gold ratio was set at 15/1, implying a value of \$19.38 per troy ounce of gold. Gold and silver coinage, principally struck by the U.S. Mint, but also coins minted by Britain and Spain, all of which contained a known quantity of gold or silver, were widely used in America in the years following the War of Independence. Gold coinage remained an important part of the money in circulation in the U.S. until the mid-1930s.
3. In 1834, the Federal government adjusted the silver/gold ratio to 16/1, effectively increasing the price of gold to \$20.67 per ounce. The price remained at this level until 1934, with the

exception of the period 1861-1879, when conditions arising from the Civil War forced the government to temporarily abandon the fixed price. The willingness of Americans to accept paper currency in exchange for gold and silver resulted in the Federal government acquiring large reserves of these metals from the many discoveries made in the course of the westward expansion of the nation. The emergence of the U.S. as a world industrial and financial power early in this century, accompanied by a series of surpluses in the balance of payments accounts, resulted in the acquisition of additional gold.

4. In 1934, the Roosevelt administration devalued the dollar, resulting in the gold price being increased to \$35 per troy ounce. This stimulated gold mining activity in the U.S., as well as abroad. Much of the increased supply found its way into the U. S. Treasury. More gold was accumulated during the second world war.
5. In 1944, the dollar was designated as the official reserve currency for the newly established International Monetary Fund. At the time, the U.S. was the pre-eminent world military and economic power, with more than three-quarters of the reserves held by the world's central banks. As the official reserve currency, the U.S. dollar was defined as being 1/35th of an ounce of gold, and the U.S. government agreed to settle all foreign accounts with gold bullion payments and receipts. Dollars and dollar credits held by foreign governments were to be counted as reserves equal to gold. Underpinning the system was the world's confidence in the ultimate ability of the U.S. to redeem its currency and international debts in gold.
6. Initially, the arrangement worked well, but a number of events gave rise to concern in the late 1950s:
 - Rapidly increasing U.S. balance of payments deficits, and the mounting Federal debt.
 - The growth of Euro-dollar accounts, outside the control of the Federal Reserve.
 - Persistent inflation in the U.S.

In October 1960, the price of gold on the London Free Market reached \$40 per ounce, and foreigners accelerated their conversion of dollars to gold. The U.S. gold reserves were rapidly depleted, so that by 1968, they had fallen to approximately 300 million ounces (about 9,300 tonnes [metric tons]), one-half the amount held eight years previously. At this point, a "two-tier" gold pricing system developed. Congress revoked the requirement that all outstanding U.S. currency be backed by one-quarter of its value in government gold reserves,

and a policy was implemented that gold would only be sold to foreign central banks. Concurrently, the U.S. government recognized the London Free Market price for other transactions, but did not exchange gold at that price.

7. These measures slowed, but did not halt, the hemorrhage of gold from U.S. reserves, and all gold sales were suspended in August 1971. In December, the dollar was allowed to "float" on international money markets, effectively demonetizing gold. In the two decades since, the price of gold has moved in response to world concern respecting political turmoil, economic conditions, and inflation expectations. The fluctuations in the price of gold since 1968 are shown in Figure 4.4, World Gold Prices 1968-1988. The price peaked at \$850 per ounce in the spring of 1980. Since then, it has traded in a broad range, generally between \$275 and \$475 per troy ounce. In the period 1980-1988, the price has averaged approximately \$420 per ounce.
8. Gold consumption in the non-communist world for the period 1980-1988 is shown in Table 4.3, Gold Fabrication in the Non-Communist World 1980-1988. Note that weights are given in tonnes (metric tons). Each tonne contains 32,150 troy ounces of gold. U.S. consumption and mine product figures for the period 1980-1988 are shown in Table 4.4, Gold Fabrication and Mine Production in the U.S. 1980-1988.

4.5.4.3 Stockpile Releases

1. Large, but unquantifiable amounts of gold have been accumulated over centuries by families in underdeveloped countries, particularly the Middle East and Asia. In the aggregate, those holdings are appreciable, but in many of those countries, such as India, there are serious structural problems in attracting the holdings onto the market. This is because: (1) most holdings individually are quite small and widely disseminated, often in villages with inadequate communication facilities, which hampers trading opportunities, (2) the holdings are often intended to function as insurance against calamitous events, and price may not be a sufficient inducement to secure their release to the markets, and (3) among wealthier investors, gold hoarding is often used to conceal wealth from the tax collector, and frequent trading activity could bring unwelcome attention.
2. The U.S. has not historically suffered from repeated bouts of famine, war or other economic or political disruptions that would be expected to condition its citizens to hoard gold. Indeed, from 1933 until 1971, it was against the law for Americans, either at home or abroad, to hold gold other than in the form of jewelry.

FIGURE 4.4

WORLD GOLD PRICES, 1968-1988

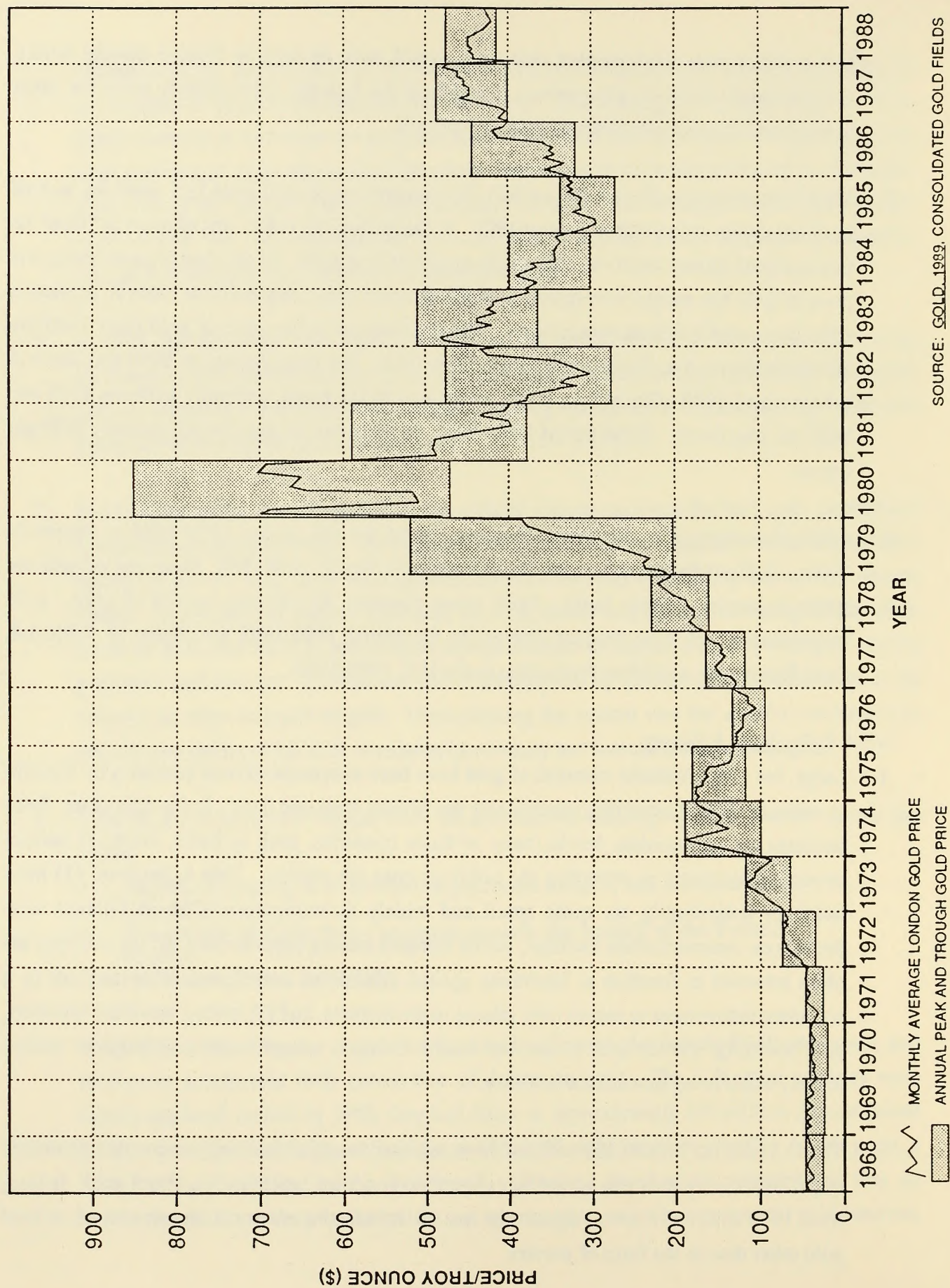


TABLE 4.3
GOLD FABRICATION IN THE NON-COMMUNIST WORLD
1980-1988 ⁽¹⁾

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Jewelry	512.8 ⁽²⁾	779.1	919.0	824.3	1,069.8	1,144.0	1,116.3	1,151.8	1,483.5
Electronics	95.3	92.9	88.9	106.5	130.5	114.5	124.0	124.6	133.9
Dentistry	64.3	65.2	60.6	50.9	52.2	53.1	50.7	48.2	50.3
Other Industrial and Decorative Applications	61.7	62.1	57.9	52.7	55.5	54.4	56.4	56.2	58.9
Medals and Imitation Coins	41.1	29.0	35.9	33.9	32.5	13.4	10.8	14.2	15.3
Official Coins	245.0	226.9	163.4	175.9	125.1	108.5	316.7	204.1	138.6
TOTAL	1,020.2	1,255.2	1,325.7	1,244.2	1,465.6	1,487.9	1,675.0	1,599.1	1,880.5

NOTES:

⁽¹⁾ Includes the use of scrap.

⁽²⁾ Quantities in tonnes (metric tons).

Source: Consolidated Gold Fields, Gold, 1989.

TABLE 4.4
GOLD FABRICATION AND MINE PRODUCTION
IN THE U. S. 1980-1988 ⁽¹⁾

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Jewelry	59.1 ⁽²⁾	64.5	71.6	79.8	83.9	89.0	92.9	94.4	100.6
Electronics	38.3	35.7	31.9	38.8	45.7	36.6	38.3	41.4	44.0
Dentistry	13.8	12.3	11.3	11.1	11.4	11.6	12.0	12.2	11.7
Other Industrial and Decorative Applications	27.9	30.1	29.1	22.7	22.6	20.9	21.1	21.0	22.1
Medals and Imitation Coins	31.2	7.6	15.6	22.0	1.7	0.1	0.1	0.1	0.3
Official Coins	0.2	0.7	0.3	5.0	9.1	0.8	57.7	65.6	24.1
TOTAL	170.5	150.9	159.8	179.4	174.4	159.0	222.1	234.7	202.8
U.S. Mine Production	30.5	44.0	45.3	62.6	66.0	79.5	118.3	154.9	205.3

NOTES:

⁽¹⁾ Includes the use of scrap.

⁽²⁾ Quantities in tonnes (metric tons).

Source: Consolidated Gold Fields 1989, Gold, 1989.

3. There are no reliable statistics on the quantity of gold privately held in the U.S., but it is probably inconsequential when measured against the size of the reserves held by the Federal government. With the availability of gold equities that trade on several North American and European stock exchanges and sophisticated futures markets, many American investors appear content to hold gold-related financial instruments in lieu of physical metal. Nevertheless, the purchases in this decade by American investors of commemorative medals and official coinage, initially Krugerrands, then Canadian Maple Leafs, and more recently American Eagle coins, suggests there is an underlying interest in asset diversification into physical metal.
4. Jewelry held by Americans potentially represents a substantial stockpile that could be drawn upon. However, given the fabrication costs and retail mark-ups charged on most jewelry items, the cost per ounce of contained gold for items purchased in the last decade may require much higher prices to attract them onto the market. Heirloom pieces and articles received as gifts might be more readily available, since prices over \$500 per ounce might represent an attractive capital gain.
5. Notwithstanding the "demonetization" of gold in 1971, central banks maintain large holdings of gold to back their respective currencies. The major industrialized nations hold approximately 80 percent of the world's official gold reserves, or approximately 29,000 tonnes. In recent years, several nations running large balance of payments surpluses, particularly those in the Far East, have been active buyers of gold, diversifying their official reserves out of U.S. dollars. Except for sales to defend their currencies, most central banks are not active sellers into world markets. The principal exceptions are South Africa, the Soviet Union and China, whose central banks sell their nations' gold production through the London and Zurich markets to earn foreign exchange. Between 1948 and 1964, the world central banks purchased almost 7,900 tonnes of gold, representing 43.7 percent of all gold coming onto the market in that period. Over the next 15 years, through 1979, the central banks were net sellers of approximately 2,100 tonnes. In the period of 1980-1988, the central banks have tended to be net buyers again, with net purchases in seven of the nine years, amounting to over 980 tonnes.
6. At present, Federal reserves are believed to be approximately 250 million ounces (about 7,800 tonnes). With U.S. consumption in the neighborhood of 200 tonnes annually, the reserves are sufficient to meet current domestic requirements for several decades. By comparison, valued at current gold prices, these reserves would be inadequate to fund this

year's projected trade deficit, let alone cover the country's position as the world's largest debtor nation.

7. The Federal government apparently believes it must maintain its gold reserves near the current level in order to maintain or defend the value of the dollar against other currencies. It is unlikely that gold would be made available from official reserves except in the gravest of national emergencies. Therefore, releases of gold from the Federal government stockpiles does not appear to be a feasible alternative.

4.5.4.4 Recycling

1. Due to gold's value, there is a strong recycling tradition for gold-bearing materials. It has been estimated that over 90 percent of the gold that has ever been mined is still available in one form or another. Approximately 40 percent is held by the world's central banks and other government financial institutions, estimated to be at least 36,600 tonnes of gold. The other 60 percent of gold supplies is controlled by individuals and institutions, chiefly in the form of jewelry, coins, bullion, and works of art.
2. Gold refineries throughout the world are able to receive, sample, and process gold-bearing materials quickly and relatively inexpensively. Barring government interference in the operation of a free market and importing/exporting gold, competitive bidding by these refineries enables the scrap vendor to receive a very high percentage of the value of the gold contained in the material being salvaged, which encourages the recycling of old gold scrap.
3. As used in the gold trade, the term "old gold scrap" describes the gold recovered from jewelry and other industrial products which have been fabricated, used, and then sold back into the market. It does not include process scrap, which is generated regularly in manufacturing and is a necessary part of the production process, as the recycling of this material constitutes no net increase in the supply of gold reaching the market.
4. Recycling of process scrap in America probably approaches 100 percent and occurs regardless of the gold price, since manufacturers of fabricated gold products generally operate on very narrow margins. Any gold wastes generated in fabrication operations, but not recovered and recycled, would cause an intolerable erosion of profitability. In contrast to the situation with process scrap, the availability of old gold scrap to the market is related to the price of gold, rising as the price of gold increases, falling as the price of gold declines. Availability of old

gold scrap to the American market in recent years has generally supplied less than one-quarter of total U.S. fabrication demands, as shown Table 4.5, Relationship of Old Gold Scrap to Total U.S. Gold Fabrication Demand.

5. Short of the type of legislation introduced during the Great Depression, which compelled American citizens to sell their gold holdings to the Federal government, it is difficult to visualize a mechanism other than a rapid escalation in price that would significantly increase the supply of old gold scrap. Moreover, the trend toward micro-miniaturization in electronic circuitry works against recycling the gold used in those applications, since the quantity of gold per unit scrapped is tending to become too small to justify the effort needed to recover it for recycling. Therefore, reliance on recycling as a mechanism for acquiring additional supplies of gold is not a feasible alternative.

4.5.4.5 Purchasing Abroad

1. In 1933, the government passed legislation prohibiting American citizens from holding gold in most forms, except jewelry. All gold coins and bullion had to be sold to the government, and a system of licenses and permits was established to prevent corporations dealing in gold from accumulating excessively large inventories. The policy was ostensibly intended to restrict gold's use to the settlement of international trade and financial obligations. Further restrictions were imposed in 1942, when all domestic gold mines were closed by War Production Board Order L-208 in order to divert mining labor into base metal production to support the war effort. Order L-208 was rescinded in 1945, but most domestic gold mines either did not reopen, or soon proved to be uneconomic. The increase in the costs of labor and supplies following the war, coupled with its fixed \$35 per ounce price, eliminated most opportunities for profitable gold mining ventures in this country at that time.
2. During the early post World War II period, the U.S. augmented its limited domestic supply of gold with purchases abroad. But foreign producers were also subject to inflationary pressures, with the result that supply was unable to keep up with demand. During the 1950s, the free market price of gold exceeded the \$35 per ounce price set in 1934 by the U.S. government, prompting a run on its gold reserves. The government finally bowed to the inevitable, suspended all gold sales, and allowed the dollar to "float" on international money markets in December 1971.

TABLE 4.5

**RELATIONSHIP OF OLD GOLD SCRAP TO
TOTAL U.S. GOLD FABRICATION DEMAND**

YEAR	TONNES ⁽¹⁾		PERCENT OF TOTAL
	SCRAP CONTRIBUTION	TOTAL GOLD DEMAND	
1980	70.9 ⁽²⁾	170.5	41.6
1981	49.0	150.9	32.5
1982	43.9	159.8	27.5
1983	39.8	179.4	22.8
1984	38.0	174.4	21.8
1985	37.7	159.0	23.7
1986	39.8	222.1	17.9
1987	51.7	234.7	22.0
1988	47.4	202.8	23.3

NOTES:

⁽¹⁾ Metric ton = 32,150 troy ounces

⁽²⁾ This abnormally large quantity is attributable to rapid increase in price of gold -- to \$850/ounce in 1980.

Source: Consolidated Gold Fields, Gold, 1989.

3. The gold price rise during the 1970s provided a world-wide stimulus to gold exploration, and steady growth in its supply soon followed. This is shown in Table 4.6, Gold Mine Production in the Non-Communist World 1980-1988. The rate of growth has been particularly dramatic in the U.S., with production increasing six-fold to 6.6 million ounces annually in the 1980-1989 period. Whereas in 1980 the U.S. had to import 82 percent of its gold needs, it is now (1989) self-sufficient.
4. At present, U.S. mines supply about 13 percent of new mine production in the non-communist world, as shown in Table 4.6. If the Federal government were to prohibit the development of new gold mines on public lands of the U.S., the growth in domestic production would rapidly be reversed. Existing ore reserves would be depleted without being replaced by other domestic production. In the absence of companion government policies to restrict demand, the shortfall would again have to be made up by imports, exacerbating the nation's already serious balance of payment deficit.
5. It should also be noted that, in the event American needs were to be met by purchasing abroad, a large proportion of the imports would likely be supplied by third world or communist nations. Given their urgent need for foreign exchange, those countries require much less environmental protection than do the agencies which stipulate the levels of environmental protection that must be met by gold mines located in California. Therefore, the alternative of purchasing abroad would likely result in substantially greater environmental impact than would developing the same supply within the constraints of Federal and California environmental laws and regulations.
6. Purchases from abroad, while logistically feasible, would adversely affect the U.S. balance of trade. Based upon this, and the above considerations, purchasing abroad as a means of attaining additional supplies of gold is not a desirable alternative.

4.5.4.6 Curtailing Non-military Uses

1. The use of gold by the U.S. Military is not significant. Its purchases tend to be indirect, such as in the circuitry of computers and radars, and in other equipment where gold plays a largely invisible, but nonetheless vital role.

TABLE 4.6
GOLD MINE PRODUCTION
IN THE NON-COMMUNIST WORLD 1980-1988⁽¹⁾

	1980	1981	1982	1983	1984	1985	1986	1987	1988
South Africa	675.1	657.6	664.3	679.7	683.3	671.7	640.0	607.0	621.0
USA	30.5	44.0	45.3	62.6	66.0	79.5	118.3	154.9	205.3
Canada	51.6	53.0	66.5	73.0	86.0	90.0	105.7	116.5	128.5
Australia	17.0	18.4	27.0	30.6	39.1	58.5	75.1	110.7	152.0
Brazil	35.0	35.0	34.8	58.7	61.5	72.3	67.4	83.8	100.2
Others	149.8	172.8	190.5	209.2	225.8	260.9	286.0	309.4	331.0
TOTAL	959.0	980.8	1,028.4	1,113.8	1,161.7	1,232.9	1,292.5	1,382.3	1,538.0

NOTE:

⁽¹⁾ Quantities in tonnes (metric tons).

Source: Consolidated Gold Fields, Gold, 1989.

2. In attempting to evaluate the opportunities to reduce the use of gold, it would be informative to examine the relative size of gold's various use categories. Cumulative uses over the last nine years for each of its six major use categories are as shown in Table 4.7, Cumulative Use of Gold in Fabrication 1980-1988. Jewelry manufacturing used the most gold, accounting for 69.5 percent of use world-wide, but only 44.5 percent in the U.S. As shown in the table, the percentage of gold used in the U.S. in the electronics, dentistry, and "others" categories was substantially higher than for those categories on a world-wide basis. Of the various categories, dentistry and other industrial applications have declined in importance in the American market in both absolute and relative terms over the last nine years (see Table 4.4). Only jewelry, electronics and official coins have experienced growth over that period. The average annual compounded rate of growth for jewelry and dental uses has been about seven and two percent, respectively. The official coins category emerged as an important factor only in 1986, when the Federal government launched the American Eagle gold coin series. The growth in official coinage is probably responsible for the fact that the use of gold for medals and imitation coins in the American market has essentially vanished.
3. A program proposing to curtail non-military uses of gold must deal with the fact that gold possesses unique properties that no other material can duplicate. These include its malleability, ductility, electrical conductivity, resistance to corrosion, and reflection of heat. Electric circuitry offers an excellent example of how these properties are relied upon in industrial goods. Another example is the thin coatings of gold on window glass. These coatings reflect heat and light from modern buildings, reducing heat gain, which translates into significant savings in the consumption of electrical power needed to operate air conditioning equipment. In many industrial applications, other materials could be substituted for gold, but the result might be inferior and/or more costly products.
4. The curtailment of non-military uses would represent a significant reversal of American gold policies over the last two decades. Since 1971, those policies have relied on the workings of the free market to regulate supply and demand for gold and, therefore the price of gold. As part of the revised policy, the 1933 prohibition against American citizens' ownership of gold was removed.

TABLE 4.7
CUMULATIVE USE OF GOLD IN FABRICATION
1980 - 1988 ⁽¹⁾

	WORLD		U.S.	
	TONNES	PERCENT	TONNES	PERCENT
Jewelry	9,000.6 ⁽²⁾	69.5	735.8	44.5
Electronics	1,011.1	7.8	350.7	21.2
Dentistry	495.6	3.8	107.4	6.5
Other Industrial and Decorative Application	515.8	4.0	217.5	13.1
Metals and Imitation Coins	226.1	1.8	78.7	4.8
Coinage	1,704.2	13.1	163.5	9.9
Total	12,953.4	100.0	1,653.6	100.0

NOTES:

⁽¹⁾ Includes the use of scrap.

⁽²⁾ Quantities in tonnes (metric tons).

Source: Consolidated Gold Fields, Gold, 1989.

5. Recent evidence of the government's continued commitment to free market policies was the decision to mint the American Eagle series of gold coins. The interest of American investors in purchasing commemorative coins was made manifest by the surge of imports of the Canadian Maple Leaf coin in 1985. Accordingly, the U.S. Treasury introduced the Eagle program in 1986, providing the market with a product made from domestically produced gold, thereby reducing imports.
6. It is pertinent to note that the Federal government could have furnished the bullion for these coins from official reserves, reducing the demand for new mine production. However, the gold was furnished from new production, thereby maintaining the official reserves. Therefore, in light of current Federal policy, the curtailment of non-military uses does not appear to be a feasible alternative.

4.5.4.7 Implementation of Alternative Methods of Acquiring Gold

1. Implementing alternative programs involving purchases abroad, recycling stockpiled supplies, and curtailing non-military uses of gold would represent a significant alteration of recent government policy favoring the use of a free market. In essence, the government would be introducing rationing, relying on some combination of permits to allocate gold to selected uses, punitive taxes on domestic gold transactions to discourage sales, and price mechanisms setting the price of gold at a sufficiently high level to encourage industry to develop substitutes.
2. Such undertakings raise a number of problems:
 - The size of bureaucracy needed by the U.S. Treasury Department or Federal Reserve in order to implement and administer a system of permits.
 - Determination of a fair price at which the government would confiscate gold held by private citizens. Depending on the price set by the government for a new program, some citizens could realize substantial profits, others, huge losses. Those facing losses might be inclined to sue the government under the "taking" prohibition of the Fifth Amendment to the Constitution. Conversely, setting the price too high would stimulate, rather than curtail, new mine production.
 - Setting a domestic price that differed significantly from a world price established by the free market would provide an incentive to illegal activities, thereby further burdening national and international law enforcement agencies.

3. Therefore, as addressed in the previous sections, methods other than new mining as a means of increasing the supply of gold are not considered feasible alternatives, as they would require a major overhaul of basic national legislation.

CHAPTER 5.0
CUMULATIVE IMPACTS

5.0 CUMULATIVE IMPACTS

5.1 INTRODUCTION

1. The Draft EIS/EIR evaluated the potential for cumulative environmental impacts that could occur from the Proposed Action in combination with other past, present, and reasonably foreseeable future actions. Other activities in the area, including utilities, services, transportation, commercial and residential development, recreation activities, grazing, and mining were identified. Future possibilities for mining were also explored.
2. A water resource issue that has been raised since the distribution of the Draft EIS/EIR is whether or not a cumulative impact would occur from non point source pollution in the Lanfair Valley aquifer. Based upon the Draft EIS/EIR analysis of project ore, protore and overburden, water percolation through these materials would not be expected to significantly alter ground water or surface water quality. Lanfair Valley water quality data (Mark Group, 1988) indicates that ground water quality is good throughout the area. No significant cumulative impact as a result of non point source pollution is therefore expected.
3. As a result of Draft EIS/EIR circulation and review, questions were asked regarding the potential for cumulative effects that would occur as a result of future expansion/modification of the Castle Mountain Project, including changes in project duration. Discussions of these issues is included herein in response to these questions. Questions were also asked about Draft EIS/EIR discussions on the potential for exploration to discover another economic ore deposit, and about future recreational use in the EMNSA. Those discussions are also expanded in this section.

5.2 FUTURE PROJECT EXPANSION/MODIFICATION

1. Mineral processing economics dictate that significant production rate increases would only occur in conjunction with expanded reserves or unusual market developments. At the present time, given the facts known about the size and disposition of the mineralization in the deposits proposed for development and anticipated market conditions, discussions on potential project

expansion or other substantial modification are considered speculative. Nevertheless, the uncertain element of discovery or some other more specific occurrence could result in future modification or expansion to the Proposed Action. Some possibilities include:

- The discovery or exposure of unique ore requiring specialized processing.
- The discovery of deep, high grade ore with underground mining potential.
- By-product sales such as clay or crushed aggregate.
- Plant modifications to enhance recovery.
- Site boundary expansion to mine a satellite discovery.

If any of these changes occurred, a revised Plan of Operations would be required, and a supplemental environmental evaluation would be completed. The incremental impacts that would occur from such an expansion could be similar to those previously described in Section 4.3.2, Enlarged Project Alternative.

2. The common environmental consideration in these possibilities is that they would involve a period of construction and/or mine development. This would be accompanied by an increase in employment and growth in traffic, due to the movement of construction employees, equipment, and materials. The number of additional employees and traffic would decrease after the construction/development phase had been completed, but could be at a higher level than that prevailing before the modification or expansion. Expansion or modification would affect vegetation, wildlife, air, water, and visual resources. In order to provide a meaningful assessment of cumulative impacts to various resource values, specific volumes, and time frames have been assumed for these theoretical examples.

5.2.1 UNIQUE ORE DISCOVERY

1. An example of the discovery of ore requiring specialized processing, would be to encounter 10,000 cubic yards of gravels containing placer gold values during the overburden removal process. The placer gravels would require removal and segregation in a specified area, until the appropriate processing facilities could be permitted and constructed.
2. A three- or four-acre site would be needed for storage and processing. The increased employment would be modest, estimated at five extra employees during excavation, eight during construction, and five during a 120-day operating and reclamation period. The employment would run concurrently with operation of the Proposed Action. Since the placer treatment facilities could be sited within an area that is planned for disturbance with the Proposed Action, it would have negligible cumulative impacts on other resource values.

5.2.2 UNDERGROUND MINING

1. The example addressed for the discovery of deep high grade ore with underground mining potential is assumed to be a labor intensive operation similar to the type of gold mining that occurred at Hart in 1907, and again in the 1930s, i.e., narrow high grade veins that are not suited to mechanized mining. The key assumptions are:
 - Reserves: 3,000,000 tons at 0.60 ounce gold/per ton of ore
 - Production: 200,000 tons per year
 - Workforce: 100 employees
 - Discovery: 1992
 - Development period: 3 years
 - Production period: 15 years
 - Location: Beneath Oro Belle deposit

2. Employment and related impacts would increase slowly during the exploration and development period, stabilizing at about 100 employees over the 15-year production period. This employment would extend beyond the life of the Proposed Action. From 1995 to 2000 there would be a 33 percent increase in employment above the level contemplated in the Proposed Action, followed by a 10-year period when the workforce would be maintained at 100 employees as the ore was mined, dropping rapidly to zero thereafter. Six average daily trips with a 40 passenger bus would be required for the additional commuter traffic. Supplies needed for the underground mining operation could probably be accommodated by one additional semi-trailer delivery per week day.

3. Because of the nature of the assumed deposit and the relatively small volume of reserves, only four or five acres of additional land would be disturbed. Surface facilities would include a headframe and related ore storage bins. Local power, water, and road systems would be extended to service the site. Wildlife would be affected by additional habitat loss and delayed final reclamation. Processing of the additional ore would require an approximate 10 percent increase in daily water and power consumption, as compared to the Proposed Action. The additional power consumption would result in some increased air emissions.

5.2.3 MINING BY-PRODUCT SALES

1. Clay deposits at Hart have been worked since the 1920s, and sales of clay could be a third possibility for future expansion of the Proposed Action. In recent years, production rates from the existing quarries at the Hart site have been less than 10,000 tons per year, owing to market conditions. It has therefore been assumed that demand would limit production to 10,000 tons annually.

2. The raw material would be transported from the site in 25-ton trucks and delivered to existing facilities at Ivanpah for shipment via railroad. Truck haulage would be restricted to those times of the year when the desert tortoise is not active. Employment increases would be minimal, estimated at four persons for three months each year. Under these circumstances, most impacts would be negligible, related primarily to additional traffic for transport of employees and the mined clay for three months each year.

5.2.4 PROCESSING PLANT EXPANSION

1. This scenario assumes the installation of a grinding circuit, designed to reduce a high grade segment of the crushed ore to approximately 80 percent passing through a 200 mesh size screen opening. Grinding the high grade portion of the ore would enhance the overall extraction of gold by the leaching solution. Up to 1,000 tons of ore per day (less than 15 percent of daily throughput) would be processed in this manner, commencing during operating year three of the Proposed Action. The high grade ore, which had been ground, would then be added to and agglomerated with the remaining 85 percent of the crushed ore, for subsequent stacking and heap leaching. The grinding facility would be constructed adjacent to the crushing plant and would require an additional 15 employees. The grinding operation would terminate upon exhaustion of the pit or the high grade underground ore discussed in Section 5.2.2. The principal impact of this plant expansion would be a 15 percent increase in power consumption and related air emissions. A projected 10 percent increase in employment, and a small increase in consumable supplies, would not be expected to increase traffic volumes, as growth could be accommodated by using spare capacity on the vehicles servicing the Proposed Action. The area of disturbance, water consumption, and wildlife would essentially be unaffected by the grinding facility.
2. Construction of a 1,000 ton-per-day grinding plant would involve a substantial number of truck deliveries to the site for a four month period and employment of about 30 people during peak activity. Air quality and wildlife would be affected by the increased activity and related traffic during construction.

5.2.5 EXPANSION OF SITE BOUNDARY

1. This scenario addresses the possibility of a satellite discovery of economic mineralization beyond the site boundary for the Proposed Action. As discussed in Section 4.2.1, the likelihood of such a discovery is remote, and evaluation of this issue is speculative. Nevertheless, for purposes of this discussion, the discovery is assumed to be a 15 million ton open pit deposit, located within a 2.5 mile radius of the crushing area designated in the

Proposed Action. The strip ratio is assumed to be three tons of overburden for each ton of ore and it is assumed that economic considerations dictate that the deposit remain in the ground until existing facilities are available for processing.

2. The estimated area of project disturbance would increase by approximately 40 percent to 1,250 acres, and would involve a new pit, overburden disposal area, haul roads and expanded heaps. This scenario is similar to the expanded reserves assessed in Section 4.3.2. However, this scenario involves increased land disturbance and an expanded project site. Manpower requirements, average daily trips for the transport of employees and operating supplies, daily water requirements, air quality, and wildlife exposure would remain essentially the same as the presently planned operation, with the exception of a 5-year extension to the mine life and the extended ore haulage system.
3. An expansion to a satellite operation, whether inside or outside the site boundary, would be subject to a detailed environmental analysis, including public scoping and comment opportunities, analogous to that required of the Proposed Action. Included in that evaluation would be the cumulative effect of the new operation and the existing Castle Mountain Project.

5.3 PROJECT OPERATION BEYOND 10 YEARS

1. The Draft EIS/EIR evaluated the potential environmental effects of the Castle Mountain Project based upon the maximum projected land disturbances, expected operational activities, and reasonable forecasting of other activities in the area. Should the Castle Mountain Project mine life be extended for a short period as a result of interim curtailment of mining and/or processing activities, it would not be expected that the environmental effects would be appreciably changed from those described in the Draft EIS/EIR.
2. While the proposed 10-year project life is conservative and realistic, based on the present knowledge of the deposits and market conditions, there is the possibility of an extended mine life (beyond the projected 10 years), as the result of additional ore processing from one or more of the following circumstances:
 - Actual mineable reserves at the site exceed the best estimates now available.
 - Increased gold prices resulting in a reduced cutoff grade and increased reserves.
 - Improved mining and processing efficiencies or recoveries, resulting in favorable economics for the treatment of lower grade ore.

3. The most likely scenario for an extended mine life would be to process any additional ore reserves at the production rate planned for the Proposed Action. Efficient operation can best be achieved by utilizing the crushing and gold extraction facilities at full capacity.
4. The impacts of an extended mine life are addressed in Section 4.3.2. In general, an extended mine life would result in continuing impacts resulting from the ongoing need for water, transportation, and disturbance of surface land. The duration of impacts to wildlife, vegetation, ground water resources, and air quality would be increased. Visual resources could also be more affected, depending on the nature and location of the disturbance. The adverse impact on the work force due to mine closure would be delayed, while the economic benefits would be extended.
5. Wildlife and habitat will be affected by the continuing traffic and new areas of disturbance. The extent of visual and land use impacts will be contingent on the specific location of the extended mining operation, location of new and/or expansion of existing overburden disposal area and heap leach pads, and rate of reclamation. An expansion of one of the pits, as described in the Proposed Action, would minimize additional land disturbance and related visual impacts. This would also delay final reclamation of the overburden disposal areas, whereas mining from a new pit could involve disturbance of several hundred acres for the pit, overburden, and/or processing facilities. Mining in a new pit would allow rock staining and other visual mitigation measures within the inactive pit to proceed. In the event that a new pit were developed with its own support facilities and overburden disposal area, the overburden and/or plant facilities installed as part of the Proposed Action could be reclaimed as originally scheduled.
6. While unexpected discoveries cannot be ruled out, geologic conditions at Castle Mountain are such that extended mining activities would most likely occur in proximity to known deposits. Improved gold prices or operating efficiencies also would favor this scenario.

5.4 FORECASTING OF FUTURE MINES BASED ON EXPLORATION

1. As described in Draft EIS/EIR Section 8.0, Cumulative Impacts, the cumulative impact resulting from other discoveries in the vicinity of Castle Mountain is tempered by the fact that the length of time between discovery of a deposit and achieving first production averages eight years. While a new discovery could occur at any time, the potential for overlap between a

new mine and the 10-year Castle Mountain Project is limited to two years. The chance of this occurring would be further reduced with each year of unsuccessful exploration. The possibility of cumulative impacts from new discoveries in the vicinity of the proposed Castle Mountain Project is also diminished by the current status of the Wilderness Study Areas (WSA) in the vicinity, particularly WSA 267 (Fort Piute). These WSAs include much of the exposed rock and many of the known mineral showings in the region, and are closed to meaningful mineral exploration until 1991, at the earliest.

2. Based on historical statistics and local geology, the most likely possibility for exploration success is in the vicinity of the known deposits. As discussed in Section 5.3, the anticipated scenario for processing such ore would be to utilize the facilities constructed for the Proposed Action, thereby extending the project life. Under these conditions, environmental and economic impacts could be prolonged.
3. Section 8.2.5 of the Draft EIS/EIR discusses cumulative impacts of the existing mining operations in the region, as well as the potential for the discovery of new mines. As discussed therein, no significant mineral resource discoveries have been announced, and no proposals for mine development, other than the proposed Castle Mountain Project, are currently being considered by government agencies. Due to the uncertainties surrounding mineral exploration and mine development (see also Section 4.2.1 of this Supplement), it is inappropriate to speculate whether or not exploration in the area would lead to discovery and development of a mine. Attempts to predict the size and location of such a hypothetical discovery are even more conjectural and would generally provide no useful information. However, it can be reasoned that development of a deposit within a 15-mile radius of the planned Castle Mountain Project is unlikely to occur during the projected life of the Proposed Action. Should such a development occur, it would likely use the facilities of the Castle Mountain site for subsequent processing or be far enough distant that the physical separation would minimize cumulative impacts. If however, a later, separate operation did overlap with the Castle Mountain Project, it could generate some cumulative impact in the areas of water, vegetation, wildlife, air quality, land use, and visual resources. Such impact would be quantified and evaluated in the appropriate environmental documentation for that project. The analyses would include the known information regarding the Castle Mountain Project.

5.5 EAST MOJAVE NATIONAL SCENIC AREA RECREATION ACTIVITY FORECASTING

1. The East Mojave National Scenic Area Management Plan describes the EMNSA as "...one of the most valuable multiple-use recreation areas in the California desert, containing some of the desert's finest scenery, notable national and cultural features, and opportunities for a wide variety of recreational activities" (BLM, 1988c).
2. While total recreational use is low compared to other desert areas, it is recognized that the area is annually receiving greater use for the many types of recreational opportunities available, including hunting, rock collecting, backpacking/camping, and off-highway vehicle use. Aerial surveys, visitor registers, and ranger patrol data indicate that the area receives about 60,000 visitors each year, primarily for day use. Based on BLM projections, it is expected that by about the year 2000, visitor levels will increase annually to 200,000. This will place additional demands on the need for parking areas, campgrounds, hiking trails, picnic facilities, and an increased emphasis on providing handicapped access. (BLM, 1988c).
3. The EMNSA covers 1.5 million acres (over 2,300 square miles). Projected visitor use levels are comparatively low for this large area. Death Valley National Monument, for example, covers about 30 percent more area (2.1 million acres, or 3,200 square miles) but receives about twelve times the number of annual visitors as EMNSA (about 721,000 visitors recorded in 1988). The majority of visitors to EMNSA, like Death Valley National Monument, tend to use the established campgrounds and visitor areas instead of the more remote and unimproved portions.
4. Lanfair Valley is perhaps one of the most remote locations in EMNSA, for access from population centers in San Bernardino County. This distance effectively precludes substantial day use visitors. However, visitors from small communities along the Colorado River undoubtedly visit the area. As explained in the Draft EIS/EIR, traffic counts and estimates imply a low level of public use. Because of its remote location and general lack of improved visitor facilities, it is expected that future visitor use of Lanfair Valley may not increase as rapidly as other areas in EMNSA. In any event, the limited 10-year life expectancy of the Castle Mountain Project would appear to preclude the potential for a significant cumulative impact from these future recreation uses on local area resources.

CHAPTER 6.0
DRAFT MITIGATION COMPLIANCE
PROGRAM SUMMARY

6.0 DRAFT MITIGATION COMPLIANCE PROGRAM

1. In accordance with NEPA and CEQA regulations and the mitigation recommendations contained in the Draft EIS/EIR, a Mitigation Compliance Program (MCP) will be adopted by the BLM as part of its ROD and by the County as part its Conditional Use Permit.
2. The purpose of the MCP is to provide the organizational structure for activities that will ensure compliance with those Castle Mountain Project mitigation measures which will be specified as conditions of approval in BLM and County permitting documents for the Proposed Action. An important objective of the MCP is to provide a monitoring program to continually assess each mitigation condition, enable potential environmental problems to be anticipated, and provide for appropriate actions to be taken. The MCP provides guidance for the monitoring, reporting, verification, remediation, and resolution of mitigation conditions, specifies participants, and outlines their roles and responsibilities.
3. The MCP is designed for use by the BLM, County, and Project Owner/Operator in maintaining and coordinating environmental compliance. Such coordination will result in streamlined procedures, minimize paperwork, and promote coordination of compliance activities.
4. In order to obtain public input on the program methodology and organizational structure, a draft MCP has been prepared and is being circulated with this Supplement as part of the environmental review process. The draft MCP is provided in Appendix E.

THE UNIVERSITY OF CHICAGO

PHILOSOPHY DEPARTMENT

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THE PHILOSOPHY OF ETHICS

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CHAPTER 7.0
QUALIFICATIONS OF PREPARERS

7.0 QUALIFICATIONS OF PREPARERS

1. This Draft EIS/EIR Supplement has been prepared by Environmental Solutions, Inc. under the direction of the U.S. Bureau of Land Management, Needles Resource Area and the County of San Bernardino, Environmental Public Works Agency. Included below are those persons who provided information and assistance in preparing this report and were not included in the Draft EIS/EIR.

7.1 AGENCIES

Bureau of Land Management, Needles Resource Area

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Chief, Resources Staff

B.A., History, 1966, Cabrini College

M.A., History, 1977, George Mason University

J.D., 1984, George Mason University School of Law

American Bar Association, Virginia State Bar

Six years experience with the BLM, including:

- Paralegal Specialist.
- Supervisory Realty Specialist.
- Chief, Resources Staff.

Ken McMullen

Botanist/Ecologist

B.S., Range and Wildlands Science, 1980, University of California, Davis

M.S., Range Science (Land Reclamation), 1985, Colorado State University

One year experience with the BLM. Five years with the Department of Defense, including:

- Two years as Reclamation Specialist (Ft. Carson, Colorado).
- Three years as Agronomist (Ft. Carson, Colorado).

7.2 CONSULTANTS

Environmental Solutions, Inc.

Peter A. Hayden

Senior Project Scientist

B.S., Mathematics, 1980, University of the Pacific

Ten years experience in air quality portions of various types of projects including:

- Supervisor of particulate emissions modeling for air quality Authority to Construct Permit amendment related to a production increase at the Mesquite Gold Mine in eastern Imperial County.

- Air quality studies in support of air quality permitting and air quality monitoring at sites involving emissions of criteria and toxic pollutants, odorous substances, hydrocarbon releases and vapor control.
- Expertise in the design, implementation and management of air quality portions of environmental impact statements, air quality regulatory evaluation, development of computerized air quality models, and performance of air quality monitoring studies.

EIS/EIR principal area of responsibility: Air quality.

Daniel M. Evans

Environmental Planner

M.S., Planning, 1985, University of Tennessee, Knoxville

Introductory Geology School, 1980, Exxon Production Research Company

B.A., Political Science, 1976, Knox College

Eight years experience as environmental planner for various projects including:

- Environmental Impact Statement for the U.S. Air Force Space Systems Division, Space Launch 7 Complex.
- Environmental Assessment for U.S. Air Force Space Systems Division, Backbone Fiber-optic Transmission System.
- Management of projects being performed at Vandenberg AFB, California involving investigation agency compliance review, and monitoring of construction activities for preservation of historical and cultural resources.

EIS/EIR principal area of responsibility: Mitigation compliance.

Consulting Wildlife And Vegetation Specialists

A. Peter Woodman

Biological Consultant

B.A., Biology, California State University, Fresno.

- Biological Consultant for spring surveys of desert tortoise populations in Arizona and California.
- Conducted 100 desert tortoise belt-transects to determine relative densities of tortoises through-out the California desert.
- Conducted studies of Ross' Gulls, in Alaska, to estimate their world population and mapped movements to assist in determining their winter refuge.

EIS/EIR principal area of responsibility: Tortoise Survey.

Timothy A. Shields

Biological Consultant

M.A., 1979, Ecology, University of California, Riverside.

B.S., 1976, Biology, University of California, Riverside.

- Nine, 60-day intensive tortoise studies in California and Arizona. Five of these were initial plot coverages which entailed plot establishment.
- Contributed to development of field techniques in the use of aerial photographs in plot layout and mapping of tortoise.
- Interpretation of population structure from field data and, in Arizona, the relationship between tortoise population density, distribution and environmental characteristics.

EIS/EIR principal area of responsibility: Tortoise Survey.

CHAPTER 8.0
ORGANIZATIONS AND PERSONS CONSULTED

8.0 ORGANIZATIONS AND PERSONS CONSULTED

1. The persons and organizations who were contacted or submitted comments during preparation of the Draft EIS/EIR are listed in Chapter 12.0 of that document. Additional agencies or persons consulted in the preparation of this Supplement are included below.

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CHAPTER 9.0
REFERENCES AND RESOURCES

9.0 REFERENCES AND RESOURCES

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(1) Document on file and available for public review at: County of San Bernardino, Land Management Department.

(2) Document on file and available for public review at: BLM, Needles Resource Area; BLM, California Desert District.

CHAPTER 10.0
INDEX

10.0 INDEX

1. This index has been prepared in compliance with NEPA regulations and to aid the reader in locating sections of this document where major issues and subjects of concern are addressed.

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APPENDIX A
DRAFT EIS/EIR FINAL DISTRIBUTION LIST

APPENDIX A
DRAFT EIS/EIR FINAL DISTRIBUTION LIST

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APPENDIX C
DRAFT EIS/EIR SUMMARY

CANYON MOUNTAIN PROJECT SAN DIEGO COUNTY CALIFORNIA DRAFT EIS/EIR

APPENDIX C

APPENDIX C DRAFT EIS/EIR SUMMARY

The Canyon Mountain Project is a proposed development of approximately 1,000 residential units, including single-family homes, townhomes, and multi-family units, located on approximately 100 acres of land in the Canyon Mountain area of San Diego County, California. The project is owned and developed by Canyon Mountain Development, LLC. The project is situated in a rural area, adjacent to the Canyon Mountain area, and is surrounded by agricultural land and undeveloped land. The project is located within the Canyon Mountain area, which is a designated area for development. The project is situated in a rural area, adjacent to the Canyon Mountain area, and is surrounded by agricultural land and undeveloped land. The project is located within the Canyon Mountain area, which is a designated area for development.

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Project Name	Canyon Mountain Project
Project Location	Canyon Mountain area, San Diego County, California
Project Size	Approximately 100 acres
Project Type	Residential development
Project Owner	Canyon Mountain Development, LLC
Project Developer	Canyon Mountain Development, LLC
Project Architect	Architectural firm
Project Engineer	Engineering firm
Project Planner	Planning firm
Project Consultant	Consulting firm
Project Attorney	Law firm
Project Environmental Consultant	Environmental consulting firm
Project Financial Consultant	Financial consulting firm
Project Marketing Consultant	Marketing consulting firm
Project Construction Consultant	Construction consulting firm
Project Operations Consultant	Operations consulting firm
Project Maintenance Consultant	Maintenance consulting firm
Project Security Consultant	Security consulting firm
Project Insurance Consultant	Insurance consulting firm
Project Legal Consultant	Legal consulting firm
Project Tax Consultant	Tax consulting firm
Project Accounting Consultant	Accounting consulting firm
Project HR Consultant	HR consulting firm
Project IT Consultant	IT consulting firm
Project Facilities Consultant	Facilities consulting firm
Project Safety Consultant	Safety consulting firm
Project Health Consultant	Health consulting firm
Project Environmental Consultant	Environmental consulting firm
Project Financial Consultant	Financial consulting firm
Project Marketing Consultant	Marketing consulting firm
Project Construction Consultant	Construction consulting firm
Project Operations Consultant	Operations consulting firm
Project Maintenance Consultant	Maintenance consulting firm
Project Security Consultant	Security consulting firm
Project Insurance Consultant	Insurance consulting firm
Project Legal Consultant	Legal consulting firm
Project Tax Consultant	Tax consulting firm
Project Accounting Consultant	Accounting consulting firm
Project HR Consultant	HR consulting firm
Project IT Consultant	IT consulting firm
Project Facilities Consultant	Facilities consulting firm
Project Safety Consultant	Safety consulting firm
Project Health Consultant	Health consulting firm

The project is situated in a rural area, adjacent to the Canyon Mountain area, and is surrounded by agricultural land and undeveloped land. The project is located within the Canyon Mountain area, which is a designated area for development. The project is situated in a rural area, adjacent to the Canyon Mountain area, and is surrounded by agricultural land and undeveloped land. The project is located within the Canyon Mountain area, which is a designated area for development.

CASTLE MOUNTAIN PROJECT

SAN BERNARDINO COUNTY, CALIFORNIA

DRAFT EIS/EIR

SUMMARY

Abstract:

The Castle Mountain Project is a proposed open pit heap leach gold mine located in the Hart Mining District of Lanfair Valley in northeastern San Bernardino County, California. Lanfair Valley is located in the East Mojave National Scenic Area of the California Desert Conservation Area. The project site is comprised of about 2,735 acres of both Federal and patented lands. The operation would use conventional heap leach processing to recover gold in a disseminated orebody. Ore would be processed at a rate of about three million tons per year for approximately ten years. At project completion, about 890 acres of the site would be disturbed. Issues identified through the public scoping process and evaluated in this document include geology, water, vegetation, wildlife, air quality, health and safety, visual resources, cultural resources, land use, socioeconomics, and infrastructure. Potential adverse impacts to the environment would be mitigated below a level of significance through regulatory requirements and through measures incorporated in project planning and design.

Actions Required:

Bureau of Land Management: Plan of Operations
County of San Bernardino: Site Approval and Mining Reclamation Plan Review

Comments on the Draft EIS/EIR must be submitted to BLM at the address below no later than 5:00 p.m., May 15, 1989 to be considered in the Final EIS/EIR. For further information, contact BLM or the County at:

U.S. Bureau of Land Management
Needles Resource Area
101 West Spike's Road/P.O. Box 888
Needles, California 92363
Attention: John Bailey

County of San Bernardino
Environmental Public Works Agency
385 N. Arrowhead Avenue, 3rd Floor
San Bernardino, California 92415
Attention: Joe Bellandi

Applicant:

Viceroy Gold Corporation
9457 South Las Vegas Boulevard
Las Vegas, Nevada 89123

Prepared by:

Environmental Solutions, Inc.
15520 Rockfield Boulevard, Suite D
Irvine, California 92718

The Draft EIS/EIR has been prepared by Environmental Solutions, Inc., an independent consulting firm, under the direction of the U.S. Bureau of Land Management and County of San Bernardino. A disclosure statement indicating that Environmental Solutions, Inc. has no financial or other interest in the Castle Mountain Project has been filed with BLM in accordance with Federal regulation 40 CFR 1506.5(c).

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1.0 INTRODUCTION

1. This Summary is designed to provide an overview of the Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed Castle Mountain Project. It contains a brief description of the proposed action and outlines the potential environmental effects and mitigation measures for each identified effect. The Summary is presented for purposes of convenience and is not intended to provide the level of detail necessary to support the major conclusions presented in the Draft EIS/EIR. If further clarification is desired, the reader is referred to the Draft EIS/EIR.
2. The Draft EIS/EIR has been prepared in accordance with National Environmental Policy Act (NEPA) regulations and California Environmental Quality Act (CEQA) guidelines for use by the U.S. Bureau of Land Management (BLM) and the County of San Bernardino in consideration of approvals to permit construction and operation of the Castle Mountain Project, a proposed open pit heap leach gold mining project. The project would be located in the Castle Mountains of San Bernardino County, California, as shown in Figure 1.1, Castle Mountain Project Location Map.

1.1 Public Scoping Process

1. A public scoping process was initiated by BLM and the County to identify the range of actions, alternatives, significant effects, and mitigation measures to be analyzed in depth in the Draft EIS/EIR, and to eliminate from detailed study issues found not to be important. The process was designed to provide opportunity for receipt of verbal and written comments from the general public and from local, State, and Federal government agencies. This was achieved through publication and direct mailing of notices, notification of local media sources, and two public meetings.
2. The primary issues of concern were employment impacts, the impact of ground water withdrawal on the Lanfair Valley aquifer and its relationship to Piute Spring, potential impact of project operations on wildlife and its habitat, reclamation of disturbed vegetation, use of hazardous materials, conformance with visual management objectives, and land use designations and future use considerations, including recreation.

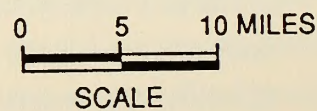
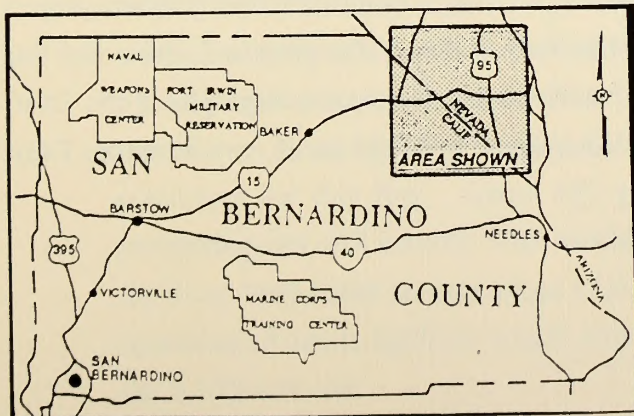
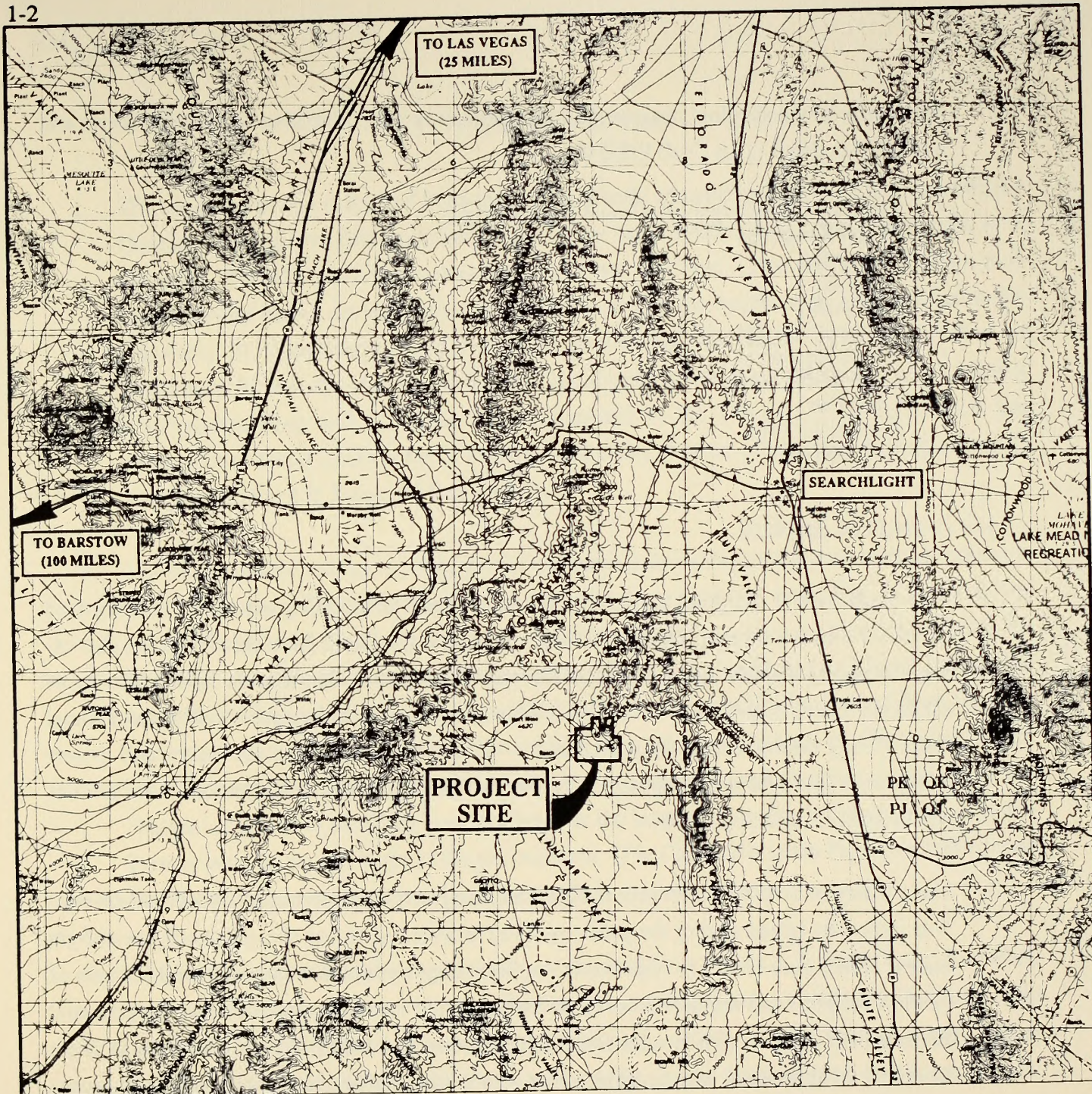


FIGURE 1.1

CASTLE MOUNTAIN PROJECT LOCATION MAP

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

REFERENCE: U.S.G.S. TOPOGRAPHIC MAP
OF KINGMAN, ARIZONA-NEVADA-
CALIFORNIA, 1954, REVISED 1969

As a result of the scoping process, the following topics were identified as potential issues and evaluated in detail in the Draft EIS/EIR:

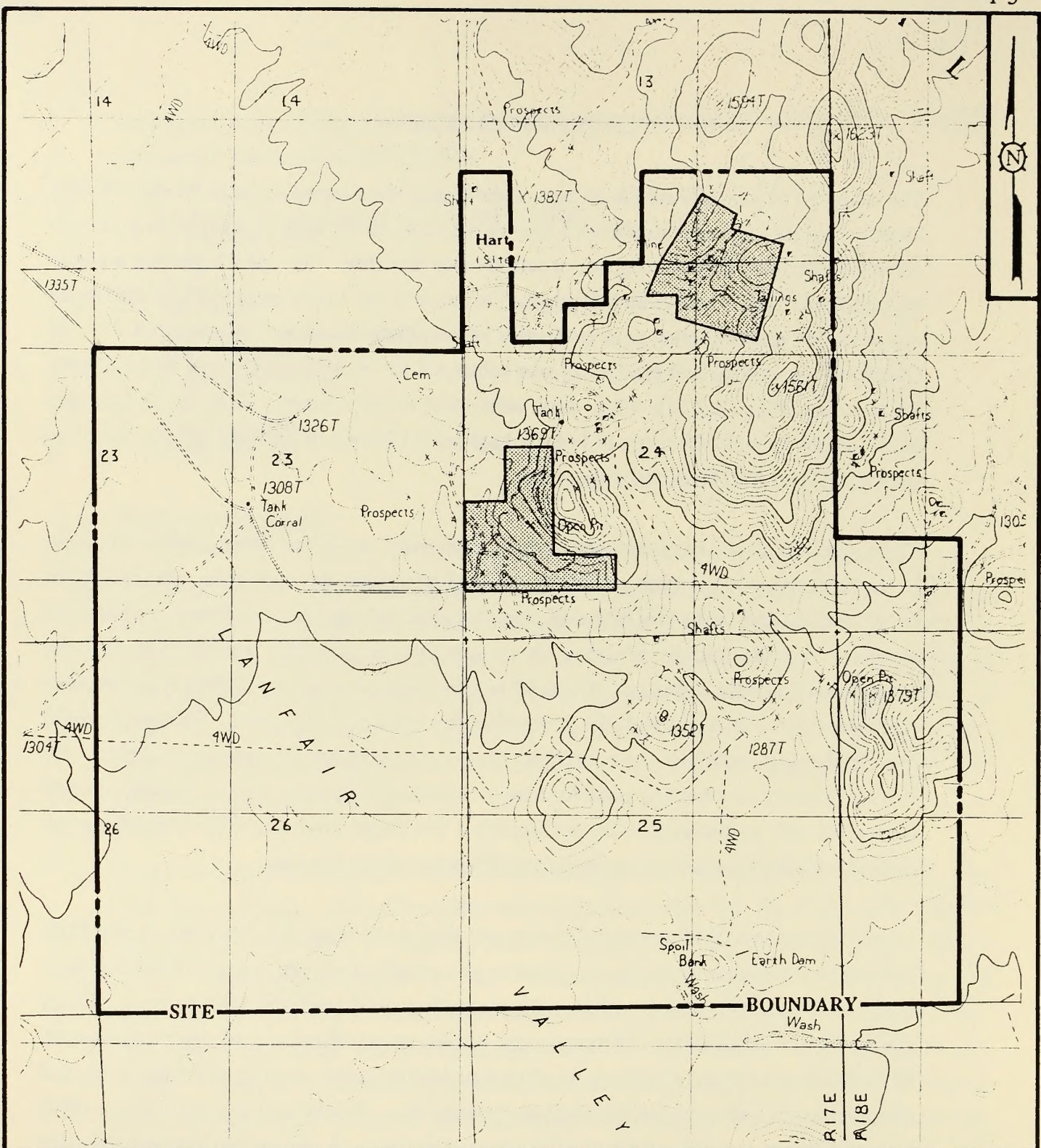
- Geology (including minerals and paleontology)
- Water Resources
- Vegetation
- Wildlife
- Air Quality
- Environmental Health and Safety
- Visual Resources
- Cultural Resources
- Land Use
- Socioeconomics
- Infrastructure


1.2 Issues to be Resolved

1. This discussion is designed to identify the main issues surrounding aspects of the proposed action for which a decision has not yet been made. For the Castle Mountain Project, rights-of-way would be needed for access and for water and power distribution lines. The BLM exercises discretionary powers for rights-of-way approvals, in accordance with the Federal Land Policy Management Act (FLPMA). Preliminary locations for water and power distribution facilities are presented in the Draft EIS/EIR. Final locations for these facilities would be determined by BLM.
2. The primary issue to be resolved is the choice among two alternatives for access right-of-way. This issue was raised during the public scoping process, when use of a proposed Searchlight Access Route between U.S. Highway 95 at Searchlight, Nevada was questioned because of concern for potential impact to the Piute Valley desert tortoise population and for potential increased off-road vehicle access from that direction to Lanfair Valley. Because of these concerns, an alternative was developed that would not involve use of the Searchlight Access Route. Known as the Ivanpah Access Route Alternative, it would effectively direct project traffic to a northwesterly access route and avoid Piute Valley. The proposed action and this alternative are both evaluated for potential environmental impacts throughout the Draft EIS/EIR. The resolution to this issue will be determined by BLM based, in part, on the Draft EIS/EIR.

2.0 PROPOSED ACTION

1. The proposed action is located in an area of the Castle Mountains known as the Hart Mining District. Mining was first established here in the early 1900s when a short-lived gold rush occurred. Periodic gold mining has occurred since that time. Two pits at the site are now mined for fine clays. An exploration program initiated by the Applicant in 1983 resulted in the discovery of disseminated gold orebodies of commercial value. A proposed Plan of Operations for mining and processing was submitted for BLM consideration, and a Mining Reclamation Plan and Site Plan were submitted to the County. The 2,735-acre site encompasses about 2,620 acres of Federal land and 115 acres of patented mining claims as shown in Figure 1.2, Proposed Project Site.
2. The project would operate as an open pit heap leach mine, using established methods common to the industry. Overburden would be removed to expose the orebodies. Ore would be excavated, crushed to the size of gravel, and deposited in heap piles on impervious liners for leaching. A dilute solution of sodium or calcium cyanide would be percolated through the heap, dissolving gold and silver. The gold-bearing solution would be drained from the heap leach pads and stored in ponds for processing in a gold recovery plant. This plant would remove the gold and silver from solution, using a carbon adsorption process, and return the "barren" solution to a holding pond for reuse at the heap leach pads. In this manner, solution is recycled with no discharge to the environment. The Castle Mountain Project would operate for about 10 years and process about three million tons of ore per year.
3. Major components of the proposed project are shown in Figure 1.3, Preliminary Site Plan, and would include the mine pits, overburden pile, crushing and ore transport facilities, heap leach pads, solution storage ponds, gold processing plant, and soil storage areas. Other components would include utilities (water, power, waste disposal, and communications), miscellaneous structures (including an administration/laboratory building and mine shop), and roads as shown in Figure 1.4, Preliminary Utilities Plan. Power would initially be provided by onsite generators using both diesel and propane fuels. A natural gas transmission line would later be extended along the Searchlight Access Route and propane-fired generators converted for this fuel. About 450 gpm of water would be required, primarily for ore processing and dust control. This would be supplied from about 10 wells in an area known as the West Well Field, located about 12,000 feet northwest of the project site. Construction and operation of onsite facilities would ultimately disturb about 890 acres, or about 35 percent of the 2,735-acre site.

**LEGEND**

-  BLM - ADMINISTERED LAND (2,620 ACRES)
 PATENTED LAND (115 ACRES)

LEGAL DESCRIPTION:

T. 14 N., R. 17E, SBB&M
 SEC. 13: S 1/2 OF SE 1/4 AND W 1/2 OF SW 1/4 OF SW 1/4
 SEC. 23: ALL, EXCEPT N 1/2 OF N 1/2
 SEC. 24: ALL, EXCEPT E 1/2 OF NW 1/4 OF NW 1/4, AND NW 1/4 OF NE 1/4
 SEC. 25: ALL; SEC. 26: ALL OF NW 1/4
 T. 14 N., R. 18E, SBB&M
 SEC. 19: SW 1/4 OF SW 1/4
 SEC. 30: W 1/2 OF W 1/2

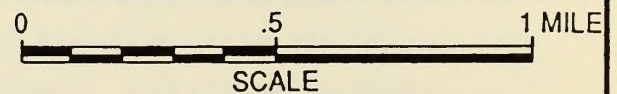
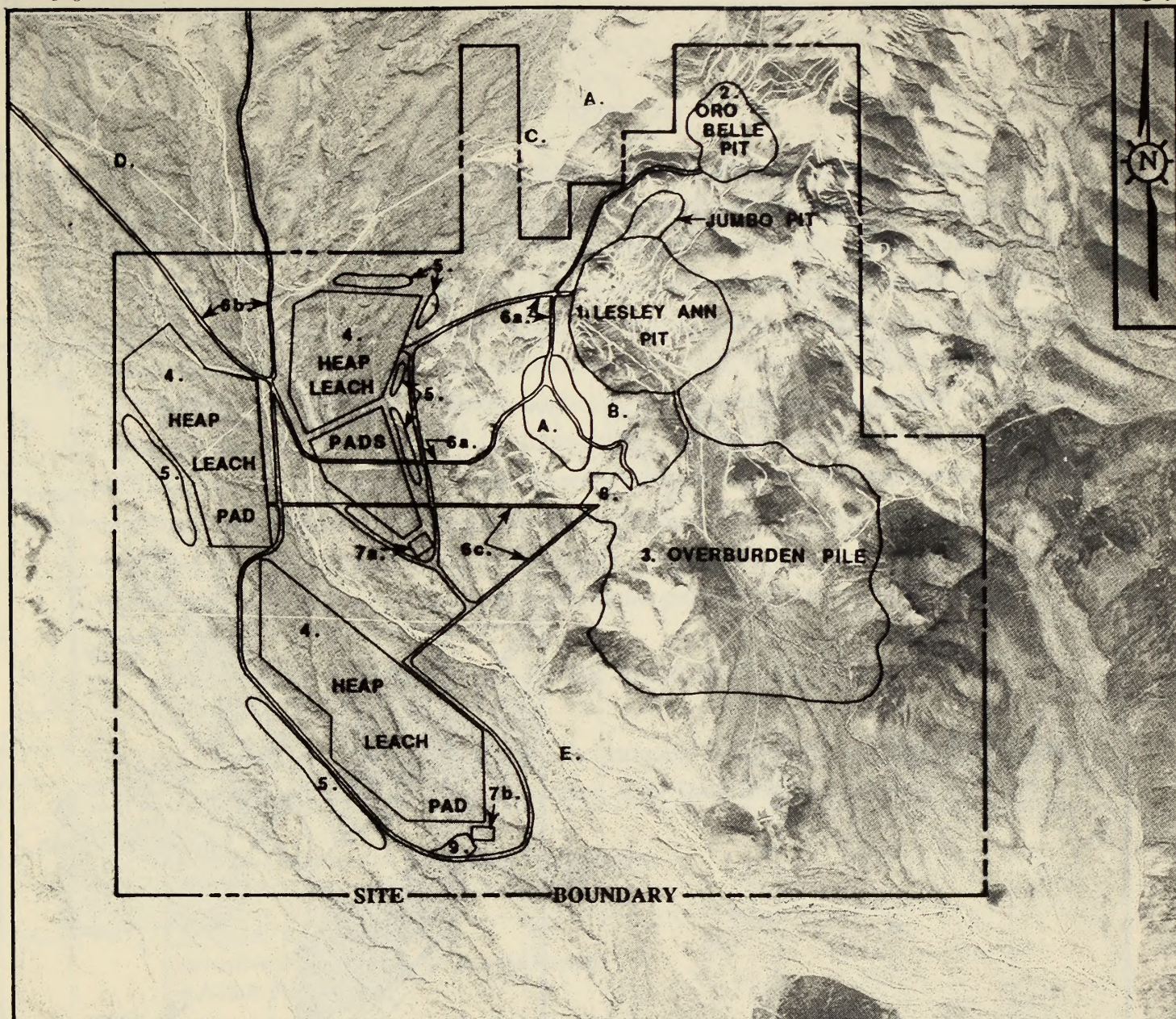


FIGURE 1.2

PROPOSED PROJECT SITE

CASTLE MOUNTAIN PROJECT
 ENVIRONMENTAL SOLUTIONS, INC.



MAJOR FACILITIES SUMMARY

FACILITY	ACREAGE
1. LESLEY ANN/JUMBO PITS	100
2. ORO BELLE PIT	35
3. OVERBURDEN PILE	300
4. HEAP LEACH PADS	330
5. SOIL STORAGE	70
6. ROADS	30
a. HAUL ROADS	
b. ACCESS ROADS	
c. CONVEYORS/HAUL ROADS	
7. SOLUTION PONDS	10
a. PREGNANT AND INTERMEDIATE	
b. PREGNANT, INTERMEDIATE AND BARREN	
8. CRUSHING AREA	10
9. PROCESSING PLANT AREA	5
PROCESS BUILDING, ADMINISTRATION	
BUILDING, PARKING, WAREHOUSING	
TOTAL	890

SITE FEATURES

- A. CLAY PIT
- B. BIG CHIEF HILL
- C. HART (TOWNSITE)
- D. HART MINE ROAD
- E. DRAINAGE WASH

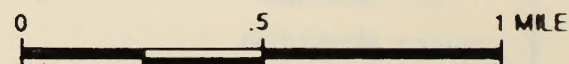
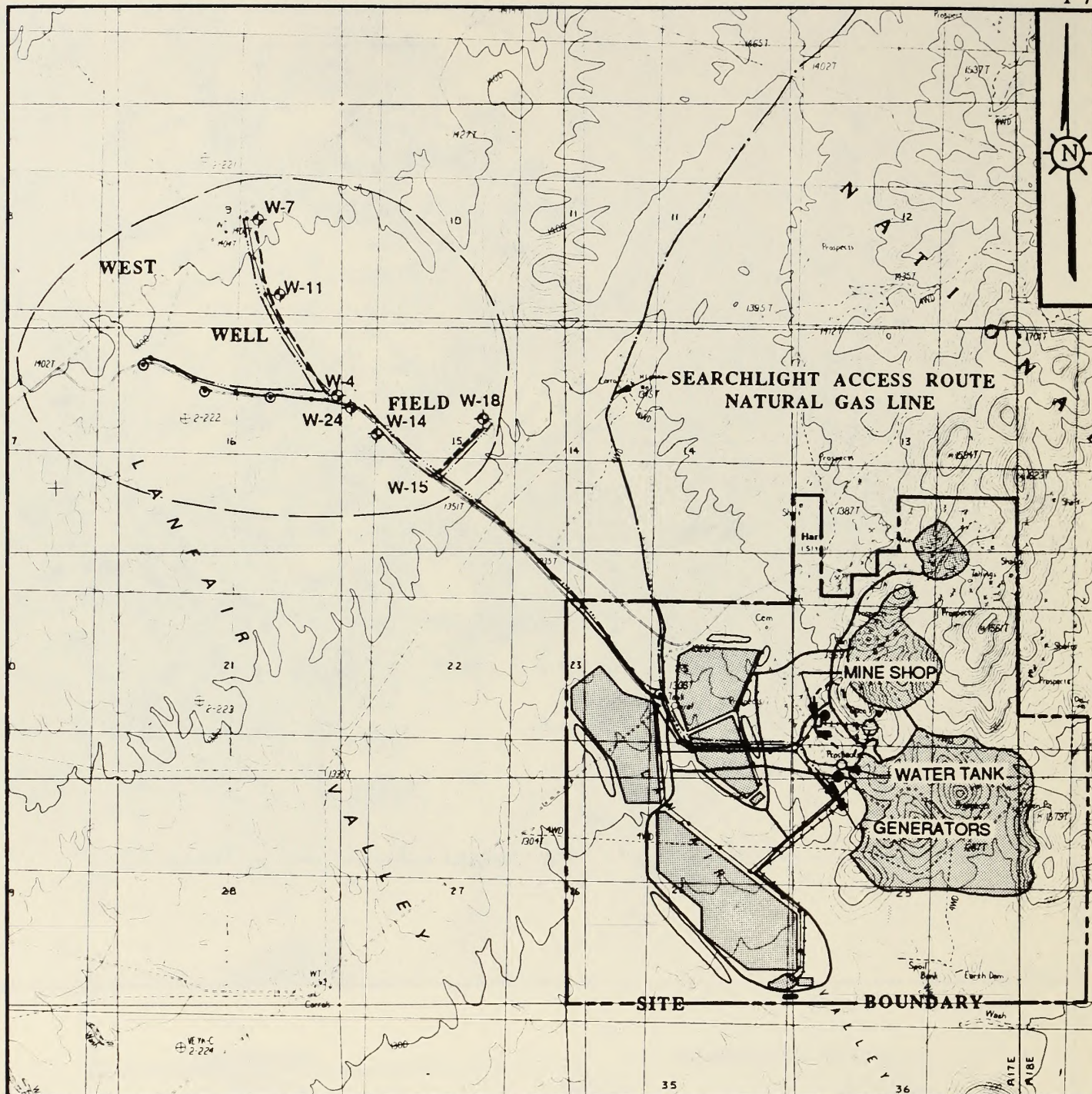


FIGURE 1.3

PRELIMINARY SITE PLAN

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

**WATER**

- MAIN WATERLINE (8")
- ⊕ EXISTING WELLS
- ⊙ PROPOSED WELLS
- WATER TANK
- SERVICE ROAD

POWER

- ▲ GENERATOR LOCATIONS
- POWER LINES
- FUTURE NATURAL GAS LINE
- PROPANE AND DIESEL FUEL STORAGE TANKS

COMMUNICATIONS

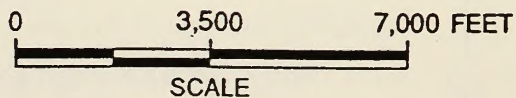
- ++++ TELEPHONE LINES
- ⊕ MICROWAVE DISH

WASTE

- LEACH FIELD

ACCESS

- ONSITE ROADS



NOTE: SEE PRELIMINARY FACILITIES PLAN
(FIGURE 1.3) FOR DESCRIPTION OF
MAJOR FACILITIES

FIGURE 1.4

PRELIMINARY UTILITIES PLAN

CASTLE MOUNTAIN PROJECT
ENVIRONMENTAL SOLUTIONS, INC.

4. The project site is located in a relatively remote area. As such, two access routes, shown in Figure 1.5, Proposed Access Routes, have been planned to provide convenient ingress/egress for commuting employees and deliveries of equipment and supplies. Both access routes would require upgrading and maintenance to accommodate daily project traffic. From the northwest, the Ivanpah Access Route would use existing paved and upgraded dirt roads for access from Interstate 15. It is expected that this route would be primarily used for deliveries of equipment and supplies. From the northeast, the Searchlight Access Route would use upgraded dirt roads (both existing and improved by the project Applicant) for access from U.S. Highway 95 at Searchlight. About 20 acres would be disturbed for improvements along this route including about three miles of new road construction. It is expected that this route would be primarily used for access by employees. The Applicant has proposed a program of project-sponsored bus/van pooling to reduce potential project traffic by about 70 percent.

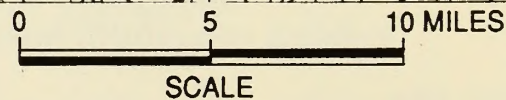
3.0 ALTERNATIVES TO THE PROPOSED ACTION

1. Several alternatives to various aspects of the proposed action were considered during the preliminary project design phase and preparation of the Draft EIS/EIR, including:
 - Alternative Mining and Processing Technologies
 - Alternative Locations for Project Facilities
 - Alternative Water Supply
 - Alternative Power Supply
 - Alternative Access (Ivanpah Access Route)
 - No Action Alternative

The first four of these alternatives were found inappropriate for the ore type or processing procedures, or would not substantially reduce or eliminate an impact of the proposed action and thus offered no environmental advantage. The Ivanpah Access Route Alternative was found to be feasible and would reduce some potential impacts. This alternative is evaluated for potential impacts in the text of the Draft EIS/EIR. In addition, the No Action Alternative is evaluated, as required by both NEPA and CEQA guidelines.

3.1 Ivanpah Access Route Alternative

1. This alternative is a variation of the proposed action. It would involve implementation of the Castle Mountain Project, but no access improvements would be completed along the Searchlight Access Route, and the potential for project traffic on that route would be limited.



ACCESS ROUTE

FIGURE 1.5

PROPOSED ACCESS ROUTES

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

Nearly all project traffic would use the Ivanpah Access Route. The proposed natural gas pipeline would still be constructed along existing roads in the vicinity of the Searchlight Access Route alignment, subject to FLPMA right-of-way requirements.

2. The primary project change with this alternative would be a redistribution of project traffic and increased travel time to the site, as compared to the proposed action using the Searchlight Access Route. An additional 30 minutes or more would be added to commute time for employees living in communities along U.S. Highway 95. This would discourage employees from living in communities such as Boulder City, east Henderson, and Laughlin, since travel times would approach two hours.

3.2 No Action Alternative

1. Consideration of the No Action Alternative is required by both NEPA and CEQA. However, because mining operations are authorized on Federal lands, this alternative could only be implemented if the proposed action were to result in "unnecessary or undue degradation." If this alternative were implemented, the site would not be developed under the proposal analyzed in the Draft EIS/EIR, and no potential for increased environmental impacts would occur.

4.0 ENVIRONMENTAL SETTING

1. Lanfair Valley lies in the eastern Mojave Desert of California. The Valley is similar to other valleys in the eastern Mojave Desert, with alluvial flatlands surrounded by sloping bajadas and mountains. Lanfair Valley is elevated above the surrounding Ivanpah, Piute, and Fenner Valleys and as such receives somewhat greater rainfall. Elevations range from about 3,200 feet at the southeastern limits of the Valley to over 7,500 feet in the New York Mountains. Elevations at the project site range from about 4,100 to 5,100 feet.
2. Vegetation and wildlife species in the region are generally wide-ranging and are commonly found throughout the Mojave Desert. Representative plant communities include pinyon/juniper woodland, blackbush scrub, Joshua tree woodland, and creosote bush scrub. An understory of desert grassland occurs throughout the floor of Lanfair Valley covering about 200,000 acres and recognized as an unusual plant assemblage (UPA) by BLM. Wildlife at the project site is typical of Lanfair Valley and includes reptiles such as lizards and snakes, various resident and migratory birds, and mammals, including coyote, jackrabbit, desert

woodrat, and mice. Species of special interest include raptors such as the golden eagle, prairie falcon, and Swainson's hawk. Desert bighorn sheep occur in mountains surrounding the Valley. The desert tortoise is expected to occur in limited numbers in Lanfair Valley. Large populations are known to exist in the lower elevation of Ivanpah and Piute Valleys.

3. Land use in Lanfair Valley and at the project site has historically been linked to mining and grazing activities. Mining has occurred throughout the Valley, but the greatest past and present activities are related to the Hart Mining District of the Castle Mountains, where gold and fine kaolin clay are found on and in the vicinity of the project site. Cattle graze Lanfair Valley and adjacent areas on extensive private lands and BLM grazing allotments. The East Mojave National Scenic Area extends over this region of the Mojave Desert, including Lanfair Valley, and there are designated wilderness study areas in the surrounding mountain ranges. Some of these areas are recommended by BLM for inclusion in the wilderness preservation system, to be considered by Congress. Recreational uses are generally casual, such as sightseeing along the Mojave Road or the East Mojave Heritage Trail.
4. From the proposed project site, the proposed Searchlight Access Route follows alluvial basins in northern Lanfair Valley to the alignment of the former Barnwell and Searchlight Railway. The easterly 9.5 miles of this route has been graded and is a County-maintained roadway (Clark County Road A68P). The western portion, which leads to Lanfair Valley, has been established by use and is not maintained. The eastern portion of Clark County Road A68P (near Searchlight) passes through low to medium density Piute Valley crucial desert tortoise habitat.
5. The Ivanpah Access Route traverses the floor of Lanfair Valley, passes through the New York Mountains, and crosses Ivanpah Valley to connect with the Nipton-Moore Road near Interstate 15. The westerly 10.9 miles of this road is paved and maintained by the County of San Bernardino. The easterly portion is an upgraded dirt road which is periodically graded and maintained by the Applicant and others. The western portion of Ivanpah Road passes through low to high density Ivanpah Valley crucial desert tortoise habitat.

5.0 SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS

1. Potential effects of the proposed action and its alternative are identified and evaluated in the Draft EIS/EIR according to criteria for significance established for each environmental issue. Measures to reduce each of the identified effects are proposed. These potential impacts and mitigation measures are summarized for each environmental issue in Table 1.1, Summary of Potential Effects and Mitigation Measures. This table outlines the major findings and conclusions of the evaluations for significant impacts. Based upon the potential impacts identified and mitigation measures incorporated, it was found that the environmental effects of the project could be reduced below a level of significance.
2. The primary difference in potential environmental impact with the Ivanpah Access Route Alternative would be a reduction in the number of acres of vegetation and wildlife habitat disturbed (about 20 acres or about two percent less than the proposed action), and a reduction in potential traffic impacts to the low to medium density Piute Valley desert tortoise population. However, this alternative would direct nearly all traffic through Ivanpah Valley, with an increase in potential impacts to the low to high density Ivanpah Valley desert tortoise population.

6.0 SUMMARY OF POTENTIAL CUMULATIVE IMPACTS

1. A cumulative impact is the effect on the environment which results from the incremental impact of a proposed action when combined with the effects of other past, present and reasonably foreseeable future actions. Past and present conditions were considered in the Draft EIS/EIR throughout the analyses of existing conditions and potential impacts of the proposed project. An evaluation of the future potential for the Castle Mountain Project to contribute to a significant cumulative impact was completed for other reasonably foreseeable future activities in the area as identified through contact with BLM and County offices.
2. Other foreseeable activities in the area include upgrading or extension of power, waste disposal, and transportation services, limited residential development, ongoing casual and active recreation uses, mineral exploration and related mining potential, and grazing. The major potential cumulative effects of these activities are generally anticipated to involve water availability, disturbances to vegetation and wildlife habitat, air quality, visual resources and land use.

3. Because other activities within the cumulative impact study area are generally isolated from each other and from the proposed Castle Mountain Project either by distance or intervening topography, the potential for a cumulative impact on most of these resource categories is minor. Based upon these considerations, and the mitigation measures that would be applied to the proposed project and future projects to cover the range of impacts anticipated, the effects of other existing and reasonably foreseeable activities and the proposed action would not significantly affect an environmental resource or the continuation of existing land uses.

TABLE 1.1
SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<u>GEOLOGY</u> 1. Potential ground motion from earthquakes could pose a hazard to project facilities. 2. Loss of potentially economic ore. 3. Potential instability of mine pit walls. 4. Paleontological resources could be lost if woodrat middens of paleontological value exist in area of project facilities.	1.1 Structures and facilities shall meet current applicable seismic safety standards. 1.2 Facilities where potentially hazardous chemicals would be used shall be located in areas not susceptible to impact from slope failure. 1.3 Artificial slopes shall be constructed at the natural angle of repose (other than pit walls) and benched as necessary to prevent soil movement. 2.1 Protore shall be separated in overburden pile to the extent practical. 3.1 The orebody consists of consolidated rock. Therefore, slopes in the mine pit are expected to be very stable. 4.1 A qualified paleontologist shall inventory the site for middens prior to surface-disturbing activities. If located, middens shall be assessed for potential scientific value and extracted at the discretion of BLM.	1. Not significant. 2. Not significant. 3. Not significant. 4. Not significant.
<u>WATER RESOURCES</u> 1. Project water consumption would lower local ground water level and affect existing wells or flows at Piute Spring. 2. Soils and ground water could be exposed to toxic materials.	1.1 Projections for water requirements have been substantially reduced through plans for a system of drip irrigation. Studies indicate minimal or no effect would occur on the ground water basin or existing wells. No significant reduction in flow is expected at Piute Spring. 1.2 Ground water extraction shall be recorded at each well with flow meters. Well field drawdown would be monitored on an annual basis. If the amount of drawdown at monitoring wells exceeds the estimated 60 feet, the well field modeling shall be re-evaluated to assure that predictions of no noticable effect at Piute Spring remain valid. 2.1 The heap leach system shall be designed as a closed circuit system that recycles solution to avoid potential contamination to soils or ground water. 2.2 Leach pads, ditches, pipes, and solution ponds shall be designed and constructed in compliance with criteria of Regional Water Quality Control Board (RWQCB). 2.3 Ground water monitoring shall be conducted during operations to detect potential release of solution from containment system.	1. Not significant. Project water use would not affect other existing or potential uses. 2. Not significant.

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES (Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>WATER RESOURCES</u> - Continued</p> <p>3. Ground water withdrawal could lower water table such that local wells could go dry.</p> <p>4. Precipitation from storm events on heaps and ponds could increase quantity of solution.</p> <p>5. Natural drainages would be altered.</p>	<p>2.4 Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill to affect water quality.</p> <p>2.5 The Applicant shall develop and employ a plan for spill prevention control and recovery.</p> <p>3.1 If local wells go dry as a result of the project, the Applicant shall be responsible for deepening the wells or otherwise provide replacement to the owner of the affected well.</p> <p>4.1 Stormwater run-off from active leach piles shall be collected in solution pipes and conveyed to storage ponds. Ponds shall be designed for excess capacity to contain potential storm events as required by RWQCB.</p> <p>5.1 Facilities shall be located to avoid major drainages. Drainage channels shall be constructed to divert minor drainages around facilities and return to their natural courses.</p>	<p>3. Not significant.</p> <p>4. Not significant.</p> <p>5. Not significant.</p>
<p><u>VEGETATION</u></p> <p>1. Onsite and offsite facilities and operations activities would disturb about 910 acres of vegetation in the Joshua tree woodland, blackbush scrub, and creosote bush communities. About 200 acres of desert grassland Unusual Plant Assemblage would be removed.</p> <p>2. Surface disturbance could provide opportunities for establishment of exotic plant species.</p> <p>3. Project ground water withdrawal could affect stream flow and riparian vegetation at Piute Spring.</p> <p>4. Surface disturbances could impact plant species recognized by various agencies or groups as rare, threatened, endangered, or sensitive.</p>	<p>1.1 A site reclamation program shall be implemented in conjunction with project operations and in accordance with SMARA. Efforts to be completed shall be derived from a revegetation research program that shall emphasize development and employment of revegetation procedures based upon onsite studies and experimentation.</p> <p>2.1 Revegetation efforts shall be initiated as use of areas is completed. Weed control shall be implemented in conjunction with fertilization and seeding. If invasion of exotic species becomes a problem, a program for weed control shall be implemented in compliance with applicable State and Federal laws.</p> <p>3.1 Detailed hydrologic studies and modeling were completed for this document to determine potential impact. Results demonstrated no significant reduction in flow would occur. No significant impact to vegetation is, therefore, expected.</p> <p>4.1 Onsite inventories and literature reviews were completed for this document to determine potential occurrence. No plants afforded legal protection or of special concern are known or expected to occur on the site.</p>	<p>1. Not significant. While recovery may be on the order of 30 to 60 years, the vegetation affected is common to the region and comprises less than 0.4 percent of Lanfair Valley.</p> <p>2. Not significant.</p> <p>3. No adverse effect.</p> <p>4. No adverse effect.</p>

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>VEGETATION - Continued</u></p> <p><u>Ivanpah Access Route Alternative</u></p> <p>1. Implementation would reduce overall project surface disturbance by about 20 acres, primarily in the Joshua tree woodland community.</p> <p><u>WILDLIFE</u></p> <p>1. Vegetation removal would degrade habitat for wildlife. Site and access roads are included in habitat range of some special interest species, including Bendire's thrasher, desert bighorn sheep, desert tortoise, and various raptors.</p> <p>2. Construction of mine pits would remove about 60 percent of former mine workings and could affect bats or other species.</p> <p>3. Project activities could affect wildlife onsite or in the project vicinity.</p> <p>4. At lower onsite elevations, impact to desert tortoise habitat and individuals could occur.</p> <p>5. Two wildlife watering guzzlers are located in the vicinity of planned project activities. These activities could deter wildlife from using the facilities.</p>	<p><u>Ivanpah Access Route Alternative</u></p> <p>1.1 No revegetation efforts would be necessary along the Searchlight Access Route.</p> <p>1.1 Habitat quality shall be reestablished through revegetation by the reclamation program and by natural processes.</p> <p>2.1 An onsite evaluation of mine workings as potential habitat was completed for this document. No significant use of shafts and adits by bats or other species is expected.</p> <p>2.2 An additional inventory of workings shall be completed during winter bat hibernating period to determine actual bat use. If a colony or substantial numbers of individuals is found, the workings would not be disturbed until the hibernation period had passed and the bats had gone.</p> <p>3.1 Applicant shall implement a wildlife education program for construction workers and employees to reduce indirect impacts to wildlife. Personnel shall be acquainted with laws protecting vegetation and wildlife, characteristics of desert wildlife, and proper procedures should wildlife be encountered. The importance of not harassing or otherwise interfering with wildlife, especially the desert tortoise, shall be stressed. Desert tortoise awareness signs shall be posted in areas where tortoises could occur.</p> <p>4.1 An onsite inventory for the desert tortoise was completed for this document. No tortoises were seen but burrows were found. If tortoises occur, their density is expected to be very low.</p> <p>4.2 Tortoise burrows shall be located and inspected prior to surface-disturbing activities. If tortoises are found, they shall be relocated offsite, using procedures acceptable to BLM.</p> <p>5.1 Guzzlers shall be removed and relocated at Applicant's expense, in accordance with BLM guidelines. This would reduce wildlife attraction to project area.</p>	<p><u>Ivanpah Access Route Alternative</u></p> <p>1. Not significant</p> <p>1. Not significant. Affected habitat is common to region and comprises less than 0.4 percent of Lanfair Valley.</p> <p>2. Not significant.</p> <p>3. Not significant.</p> <p>4. Not significant.</p> <p>5. Not significant.</p>

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
WILDLIFE - Continued		
6. Project lighting could attract animals to areas where they could be affected by operations activities.	6.1 Where possible, shielded lighting shall be used to minimize attraction.	6. Not significant. Some attraction to site may be unavoidable, although operations activities would be expected to deter most animals.
7. Use of explosives and equipment would generate noise. Some animals, such as kangaroo rats and lizards, are rendered temporarily deaf when subjected to excessive noise and become vulnerable to predation. Communication noises (such as courtship and territorial vocalizations by birds) could be interrupted by project noises.	7.1 None available.	7. Not significant. Although unavoidable, the majority of noise would be limited to immediate source area. Effect is expected to be negligible within one mile of source. Impact would not significantly affect wildlife populations.
8. Cyanide solution may attract animals seeking water. Ingestion of cyanide solution or prolonged contact with skin can result in death. Contact by animals where sufficient quantities of solution are available to drink or bathe in could occur at solution ponds or the solution collection and conveyance system.	8.1 Several measures to isolate wildlife from processing solution shall be incorporated into project plans. Fencing around solution ponds shall exclude larger animals. Sheet metal shall be used at and below ground level to exclude small and burrowing animals. 8.2 Ponds shall be covered with netting or other material acceptable to BLM to discourage access by bats and birds. 8.3 Heap piles shall be fenced with barbed wire. Drip irrigation would be used to distribute solution directly on top of heaps to minimize potential for surface ponding. Use of conventional sprinklers shall be limited to sides of heaps where no ponding is expected. 8.4 Solution shall be recycled. The system would operate as a closed circuit between ponds, processing plant, and heap piles, with solutions transported in closed pipes instead of open ditches.	8. Not significant. Measures incorporated in design would essentially eliminate wildlife exposure to processing solution. However, small animals may access points where limited quantities of solution is exposed.
9. Project ground water withdrawal could affect stream flow and habitat at Piute Spring.	9.1 Detailed hydrologic studies and modeling were compiled for this document to determine potential impact. Results demonstrated no significant reduction in flow would occur. No significant habitat impact is therefore expected.	9. No adverse effect.
10. The regional raven population could increase if project garbage presents a new food source. Road kills from traffic could also provide additional food. If an increase in ravens occurred, they could prey on young tortoises.	10.1 Raven populations in the project vicinity shall be monitored by the project environmental specialist. Results would be provided to BLM to assess if an increase should occur.	10. Not significant. Project contribution to this secondary cumulative impact would be minimal and limited to operational period.

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>WILDLIFE</u> - Continued</p> <p>11. Traffic on access roads would increase impact to wildlife, particularly desert tortoise populations in Ivanpah and Piute Valleys. Piute Valley is of particular concern because the tortoise population has declined in recent years.</p>	<p>10.2 Project waste shall be properly managed to control garbage that could attract ravens. Garbage would be kept in containers designed to exclude wildlife.</p> <p>10.3 Project traffic shall be reduced by bus/van pooling, and access roads shall be posted for maximum speed limit of 35 mph, to reduce the probability of road kills.</p> <p>11.1 Applicant shall employ a program of bus/van pooling to reduce potential traffic. Drivers shall be educated about desert road driving, maintaining proper speeds, and the importance of not harassing or otherwise interfering with wildlife, especially the desert tortoise.</p> <p>11.2 Tortoise fencing and culverts shall be constructed along portions of the Searchlight Access Route and Ivanpah Access Route segments passing through crucial desert tortoise habitat. Fencing shall be checked regularly to maintain proper function.</p>	<p>11. Not significant. Project traffic would be limited and would occur during operational period. Fencing would mitigate project impact and positively affect population status in the long term.</p>
<p><u>Ivanpah Access Route Alternative</u></p> <p>1. Improvements to the Searchlight Access Route would not be completed. This would reduce overall habitat impact by about 30 acres. Potential for traffic impact to Piute Valley desert tortoise population would be decreased, while potential for traffic impact to Ivanpah Valley desert tortoise population would be increased.</p>	<p><u>Ivanpah Access Route Alternative</u></p> <p>1.1 No additional mitigation would be necessary.</p>	<p><u>Ivanpah Access Route Alternative</u></p> <p>1. Not significant.</p>
<p><u>AIR QUALITY</u></p> <p>1. Fugitive dust from activities could increase PM₁₀ particulate levels. Total PM₁₀ from project activities is estimated to be about 64 tons per year.</p>	<p>1.1 Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.</p> <p>1.2 Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.</p> <p>1.3 Speed restrictions shall be enforced on mine roads to minimize surface disturbance of the roadways.</p> <p>1.4 Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.</p> <p>1.5 Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.</p>	<p>1. Not significant. Project contribution would not result in a violation of ambient air quality standards.</p>

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>AIR QUALITY</u> - Continued</p>	<p>1.6 Air drilling equipment shall be shrouded with standard debris collecting devices and/or wet drilling techniques shall be utilized during all drilling operations. Manufacturer specifications for all shrouding devices shall be submitted to the SBCAPCD District for review prior to use. The debris collecting devices shall have a minimum design efficiency of 90 percent.</p> <p>1.7 The live storage portion of the coarse ore stockpile shall be covered to minimize wind-blown dust.</p> <p>1.8 Blasting during high winds shall be minimized or curtailed to minimize wind-blown dust.</p> <p>1.9 The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind-blown dust. High pressure agglomerative dust suppression systems using chemical surfactants to reduce surface tension shall be used in areas of high particulate emission potential, such as the crusher discharges and the primary, secondary, and tertiary screens. Specifications for these systems shall be submitted to the District for review prior to installation.</p> <p>1.10 Revegetation efforts shall be initiated as use of certain areas is completed. This would reduce potential for fugitive dust.</p> <p>1.11 PM₁₀ concentrations shall be routinely monitored and submitted to SBCAPCD for the duration of project operations.</p>	
<p>2. Process and fuel emissions could reduce ambient air quality.</p>	<p>2.1 The majority of the onsite power would be generated using propane or natural gas. These sources are generally recognized to be clean burning fuels, with relatively low emission rates. The type of engine selected for the one diesel generator which is required would emit only about one half of the NO_x of comparable engines, because of its unique design to reduce combustion temperatures.</p> <p>2.2 Emissions from mobile equipment and vehicular engines shall be controlled by using only low sulfur fuels, implementing a routine maintenance program to avoid operating inefficiencies, and reducing vehicular traffic by providing project-sponsored bus/van pool for the majority of employees.</p>	<p>2. Not significant. Project contribution would not result in a violation of ambient air quality standards.</p>

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES
(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>AIR QUALITY</u> - Continued</p> <p>3. Process solutions would release hydrogen cyanide gas.</p>	<p>3.1 Hydrogen cyanide shall be routinely monitored at the processing facilities as a requirement of the employee health and safety plan implemented according to Mine Safety and Health Administration regulations. These requirements mandate that HCN concentrations be below 10 parts per million. In addition, the Applicant shall periodically perform airborne HCN surveys to verify that the potential public exposure to cyanide is inconsequential.</p>	<p>3. Not significant. Hydrogen cyanide would be below MSHA threshold limits.</p>
<p><u>HEALTH AND SAFETY</u></p> <p>1. Explosives would be used to loosen ore.</p> <p>2. Employee and public safety concerns include industrial safety and industrial hygiene issues especially for use of potentially hazardous materials.</p> <p>3. Potential accidents associated with unauthorized entry into the mining area.</p> <p>4. Handling and disposal of process and other operations wastes.</p>	<p>1.1 Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting.</p> <p>2.1 Applicant shall develop and employ a plan for spill prevention control and recovery.</p> <p>2.2 Areas where toxic solutions would be used shall have dikes or curbs to contain potential spills.</p> <p>2.3 Project shall comply with applicable Mine Safety and Health Administration standards to achieve a safe working environment. Rules and regulations of County Department of Environmental Health Services (DEHS) shall be followed to assure that no significant public health hazard would be created.</p> <p>2.4 First aid, fire suppression, and communications equipment shall be maintained onsite.</p> <p>3.1 Fences shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. Personnel trained in security shall be onsite on a 24-hour basis.</p> <p>4.1 Domestic and industrial wastes shall be managed and disposed of in a manner acceptable to BLM and the County.</p> <p>4.2 Domestic and nonhazardous wastes shall be properly stored and removed to Class III landfills.</p>	<p>1. Not significant.</p> <p>2. Not significant.</p> <p>3. Not significant.</p> <p>4. Not significant.</p>

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>HEALTH AND SAFETY</u> - Continued</p> <p>5. Transport of reagents and fuels to site could pose a hazard on roads.</p> <p>6. Regular traffic on unmaintained or inadequate access roads could be hazardous.</p> <p>7. Potential accidents associated with entry into the reclaimed mine site.</p>	<p>4.3 Domestic sewage shall be disposed in leach fields acceptable to DEHS. Portable toilet waste shall be removed offsite by a contracted hauler.</p> <p>4.4 Industrial wastes, fuels, and oils considered hazardous shall be recycled or removed to appropriate landfill or treatment facility.</p>	<p>5. Not significant.</p> <p>6. Not significant.</p> <p>7. Not significant.</p>
	<p>5.1 Transport of hazardous materials shall be limited to daylight hours, Monday through Friday.</p> <p>5.2 Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications.</p> <p>5.3 Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials.</p>	
	<p>6.1 Applicant shall provide road improvements and implement a regular maintenance program. A maximum speed limit of 35 mph shall be posted.</p>	
	<p>7.1 A comprehensive Reclamation Plan that includes public safety measures shall be implemented.</p>	
<p><u>VISUAL RESOURCES</u></p> <p>1. Operation activities, equipment, and structures would change visual character of site from passive to active.</p> <p>2. Project would modify topography and visual appearance of site. Upper walls of mine pits, overburden, heap piles, and existing clay pits would be visible from locations in Lanfair Valley.</p>	<p>1.1 Structures shall be painted with colors selected by BLM to blend into surrounding environment.</p> <p>1.2 Outdoor lighting for mine pits and other nighttime activities shall be shielded to reduce potential effects.</p> <p>1.3 All operating facilities, including structures, equipment, transmission lines, and fencing, shall be removed at project completion, as required by BLM and by the Reclamation Plan.</p>	<p>1. Not significant. Movement of trucks and equipment may attract eye of observers in Lanfair Valley. These effects would be limited to the operational period and would not alter long-term visual quality.</p> <p>2. Not significant. While land-form alterations and some color contrast would be unavoidable, project has been designed for "best practices" in conformance with the East Mojave National Scenic Area Plan. Impact would be compatible with existing character (VRM Class III) of southern Castle Mountains. Reclamation of Big Chief Hill clay pit may result in overall net positive impact.</p>
	<p>2.1 Overburden and heap leach piles have been planned for locations that would minimize the degree to which they would be seen from primary roads. Low hills would partially conceal overburden. Heap piles would form low mesas near the valley floor. Overburden would be placed over Big Chief Hill clay pit.</p>	

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<u>VISUAL RESOURCES</u> - Continued	2.2 Site reclamation shall include modification of overburden and heap pile shapes to reduce potential impact of straight line geometrics. Revegetation would assist in reducing color contrasts. Upper mine pit walls shall be stained to reduce color contrasts. Big Chief Hill clay pit shall be reclaimed and upper walls stained.	
<u>CULTURAL RESOURCES</u> 1. Project site is located in area known to contain evidence of historic and prehistoric activities. Surface disturbances could destroy these resources.	1.1 Inventories of prehistoric and historic resources have been completed for the project site and surrounding areas. Results have been reviewed by BLM, and a proposed data recovery program has been prepared and submitted to the State Historic Preservation Officer (SHPO) for review. 1.2 Pursuant to State and Federal law, recovered resources shall be curated at specific institutions. 1.3 Determination of National Register of Historic Places eligibility and effect to cultural sites is being coordinated with California and Nevada SHPOs. Any additional mitigation required shall be incorporated. 1.4 In addition to the data recovery program, the Applicant has incorporated measures to reduce potential impact to cultural resources in the general vicinity. A chain link fence shall be constructed around the Hart townsite cemetery and a descriptive sign posted. Employees shall be informed about cultural resources and the need for their preservation. Access roads to areas of high cultural resource sensitivity shall be closed or rerouted, as directed by BLM.	1. Not significant.
<u>Ivanpah Access Route Alternative</u>	<u>Ivanpah Access Route Alternative</u>	<u>Ivanpah Access Route Alternative</u>
1. No improvements along the Searchlight Access Route would be completed. No potential for impact to cultural resources along that route would occur.	1.1 No additional mitigation measures would be necessary along the Searchlight Access Route.	1. Not significant.
<u>LAND USE</u>		
1. Project activities could be incompatible with other uses of site and surrounding area including clay pit mining activities, livestock grazing, and recreation uses.	1.1 Applicant shall ensure that project activities would not preclude access to clay pits by owners or operators. 1.2 Applicant shall construct and maintain fencing to restrict livestock from operational areas. Cattle guards shall be installed at points where fences cross access roads. 1.3 Applicant shall provide alternate water sources if project activities would interfere with existing livestock watering facilities.	1. Not significant. A reduction in about 37 AUMS of livestock forage capacity would occur until vegetation recovery is complete. This unavoidable impact would not significantly reduce livestock production.

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<p><u>LAND USE</u> - Continued</p> <p>2. Provision of improved access from Piute Valley could increase recreational uses in Lanfair Valley with indirect impacts to wildlife and grazing uses.</p> <p><u>Ivanpah Access Route Alternative</u></p> <p>1. No improvements to the Searchlight Access Route would be completed. No potential for conflicts with grazing uses along that route would occur.</p>	<p>1.4 Grazing lessees shall be compensated by Applicant for livestock killed or injured by vehicles driven by project employees.</p> <p>1.5 An interpretive site and viewing area shall be provided for recreational visitors to project. The site shall include descriptive information about current mining operations and the history of the Hart Mining District.</p> <p>1.6 A historical marker shall be constructed along the Searchlight Access Route, describing the history of the former Barnwell and Searchlight Railroad.</p> <p>1.7 Reclamation plans and procedures shall include provisions to continue existing uses following project completion. Mine pits shall be accessible to operators for additional recovery of low grade ore. Revegetation of grassland would provide for livestock grazing. Casual recreation activities would again be permitted in the project area.</p> <p>2.1 Access Route use shall be limited to operational period. Public use would discontinue following road reclamation.</p> <p><u>Ivanpah Access Route Alternative</u></p> <p>1.1 Revegetation and reclamation along the access route would not be necessary. Additional fencing and cattle guards would not be necessary. The historical marker for the Barnwell and Searchlight Railroad would not be constructed. No mitigation would be required.</p>	<p>2. Not significant. Surface disturbances by casual recreation use would be limited in extent.</p> <p><u>Ivanpah Access Route Alternative</u></p> <p>1. Not significant.</p>
<p><u>SOCIOECONOMICS</u></p> <p>1. Project operating employment of about 150 persons would increase population and place demands on housing availability.</p> <p>2. Project activities could generate demand for public emergency response services.</p>	<p>1.1 Reviews of regional housing completed for this document determined that adequate housing would be available to meet limited project employee demand. No mitigation would be required.</p> <p>2.1 First aid training shall be provided and appropriate equipment maintained onsite. Procedures for emergency response shall be developed for use in the event of an accident. Personnel trained in security would be on duty 24-hours per day.</p>	<p>1. No adverse effect.</p> <p>2. Not significant.</p>

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

TABLE 1.1

SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES
(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION
<u>INFRASTRUCTURE</u> 1. Project would create need for adequate access roads and utilities, including power and water.	1.1 Applicant shall provide upgrading and maintenance of dirt access roads. Utilities for the project shall be self supporting and provided by Applicant.	1. No adverse effect.

Note: Potential effects and mitigation measures apply to both Proposed Action and Ivanpah Access Alternative unless otherwise indicated.

APPENDIX D
ONSITE DESERT TORTOISE SURVEY

APPENDIX D
ONSITE DESERT TORTOISE SURVEY

APPENDIX D

CASTLE MOUNTAIN PROJECT ONSITE DESERT TORTOISE SURVEY

D.1 METHODS

1. The Castle Mountain Project site was surveyed for the presence and location of desert tortoises on June 2, 3 and 4, 1989 by Peter Woodman and Tim Shields. The total area covered during the visit was 71.6 hectares (176.9 acres) or approximately 6.5 percent of the project site. Because our objective was to verify the presence or absence of tortoises, the areas surveyed were believed to have the highest potential for use by tortoises. All tortoise sign found was mapped using an aerial photograph. Two types of transects were performed, including systematic north/south transects, and transects designed to inventory the washes.
2. Approximately 33.7 kilometers (21.1 miles) of north/south transects were walked. The two workers walked 30 meters (100 feet) apart searching for scats, burrows, carcasses, tracks, and live tortoises. Transects were walked in pairs that were spaced at 75-meter (225-foot) intervals and were from 800 to 1,200 meters (2,650 to 3,950 feet) long. The effective width of each transect was 10 meters (30 feet), thus 33.9 hectares (83.8 acres) were sampled in this fashion. The total miles of transects walked are shown in Table D.1, Castle Mountain Project Site Desert Tortoise Survey Coverage by Section. Transect locations are shown in Figure D.1, Desert Tortoise Survey Transect Locations.
3. Based on information from a previous visit by Dr. Brattstrom (October 7-8, 1988) and our results from the initial north-south transects we altered our survey strategy to emphasize a search of washes on the site. All major drainages were covered by the two workers searching opposite sides of each wash. Smaller washes were searched by a single worker. The pattern of separate transects was also used in the hilly areas of the site with the workers covering slopes on opposite sides of a canyon. A total of 37.4 kilometers (23.4 miles) were searched in this way. The total area covered was 37.7 hectares (93.2 acres).

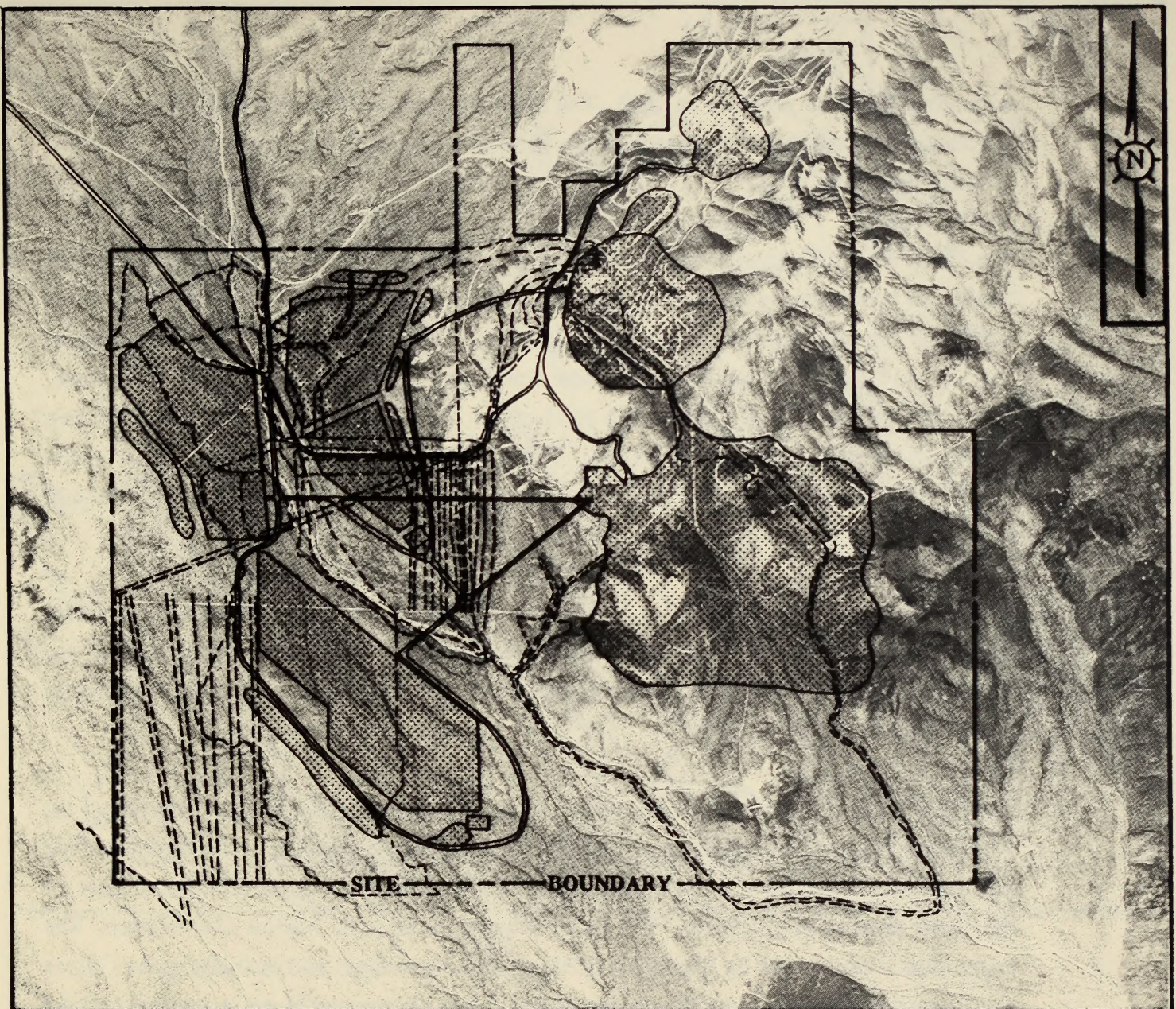
D.2 RESULTS

1. Tortoise sign was found throughout the project site. The sign density indicates that the sandy washes and their immediate vicinity are the most heavily used areas. However, fresh signs

TABLE D.1

**CASTLE MOUNTAIN PROJECT SITE
DESERT TORTOISE SURVEY
COVERAGE BY SECTION**

TRANSECT LOCATION SECTION NO.	NUMBER OF MILES WALKED			
	FLATS/ BAJADAS	WASHES	HILLS	TOTAL MILES
23	5.1	6.7	--	11.8
24	1.0	--	5.3	6.3
25	1.5	6.0	--	7.5
26	13.5	4.5	--	18.0
30	--	0.9	--	0.9
TOTAL	21.1	18.1	5.3	44.5



LEGEND

----- TORTOISE TRANSECT LOCATIONS



PROPOSED PROJECT DISTURBANCE AREAS

===== PROPOSED ROADS

0 .5 1 MILE

FIGURE D.1

DESERT TORTOISE SURVEY TRANSECTS LOCATIONS

CASTLE MOUNTAIN PROJECT

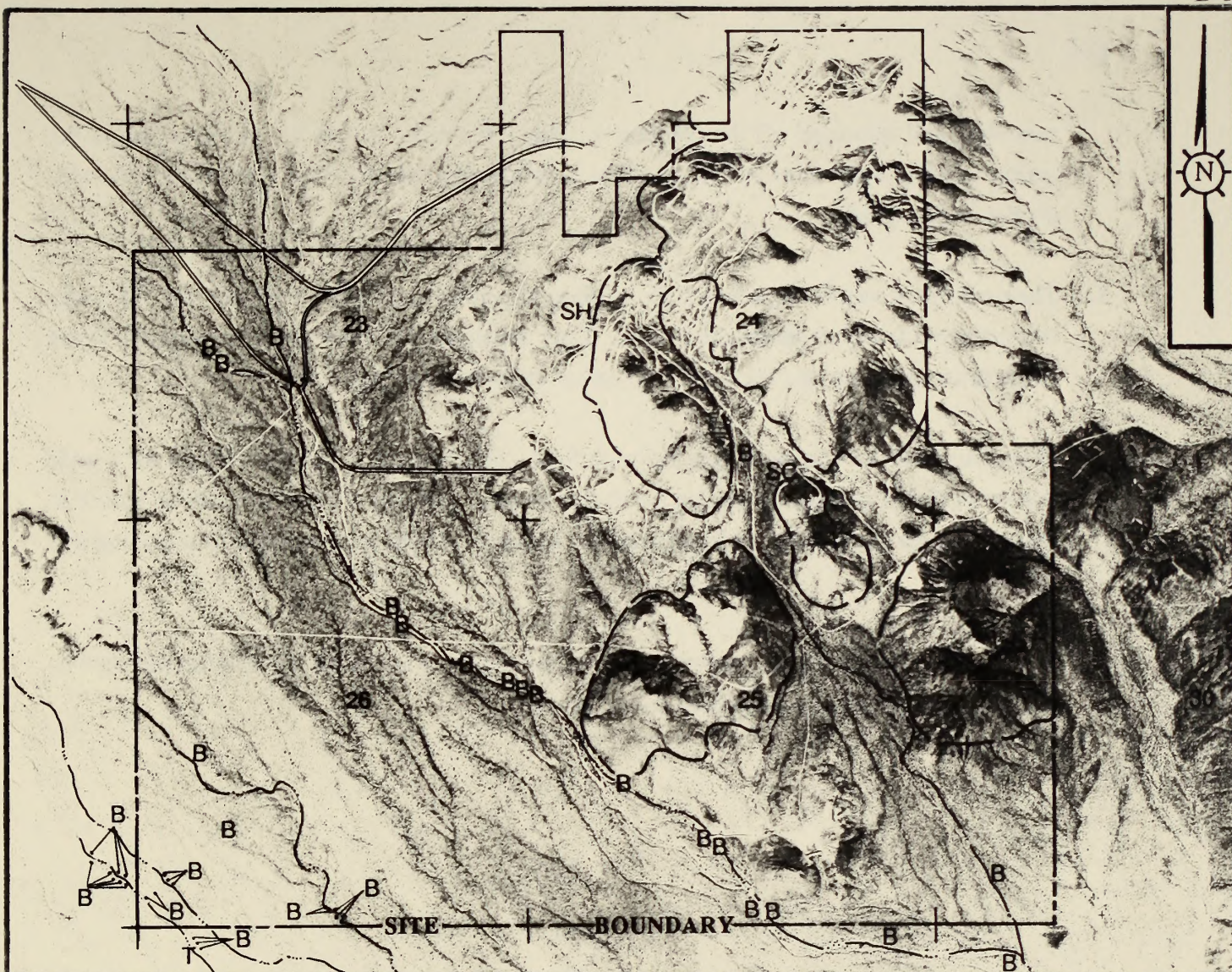
ENVIRONMENTAL SOLUTIONS, INC.

were on the upland portions as well. The survey technique was not designed to yield an estimate of density but the opinion of the authors is that densities range from five to ten tortoises per square mile.

2. The locations of all sign seen are mapped in Figure D.2, Desert Tortoise Survey Results Map. Several of these deserve special mention. Dr. Brattstrom indicated a cluster of burrows in a wash near the southwest corner of the project site. This area was searched the morning of June 3. At 08:00, a subadult male tortoise was found basking near a burrow in the wash-bank. It was within 100 meters (328 feet) of the west edge, just north of the southwest corner. Sixteen burrows were in this area, five of which were within the project site. Several had been used recently. Another cluster of five burrows were located in a wash-bank approximately 400 meters (1,320 feet) east.
3. The majority of the other burrows were found along the large wash that bisects the site from the northwest corner to the midpoint of the southern boundary. One fairly dense cluster was in the northeast quarter of Section 26, otherwise they are scattered along the wash in singles and pairs.
4. The most surprising result of this survey was the location of tortoise sign near the center of the project site in a mountainous area where significant surface disturbance from previous mining has occurred. In addition, the elevation, 4,600 feet, is close to the upper elevational limit for the desert tortoise in California. The rocky substrate is poor for burrow construction. The vegetation is dominated by blackbush (*Coleogyne ramossisma*) and includes agave (*Yucca schidigera*) and Joshua tree (*Yucca brevifolia*). This plant assemblage is atypical tortoise habitat. Despite these facts, a cluster of one to two week old scat was in the southeast quarter of Section 24, a burrow was near the center of the section and the carcass of an adult tortoise that died in 1985 or 1986 was in the northwest quarter of the same section. This indicates that tortoises are distributed throughout the project site and are not confined to the bajadas.

D.3 RECOMMENDATIONS FOR MITIGATION

1. Tortoise-proof fencing should be erected around the entire project site and all roads in the area prior to the initiation of construction activities. If the project is implemented in stages then an alternative would be to fence only that portion of the site in which activity will take place. After fencing and prior to construction, tortoises within these areas should be located,



KEY

TORTOISE SIGN

- B - BURROW
 SH - SHELL
 SC - SCAT
 T - LIVE TORTOISE

TOPOGRAPHIC FEATURES

- - WASH
 - - - - - HILL
 ===== DIRT ROAD
 + - SECTION BOUNDARY
 24 - SECTION NUMBER

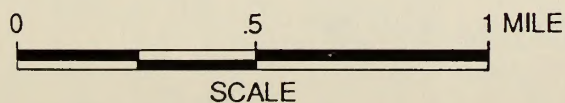


FIGURE D.2

DESERT TORTOISE SURVEY RESULTS MAP

CASTLE MOUNTAIN PROJECT

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removed, and relocated off the construction site. Tortoises should be relocated during the spring when temperatures will allow them to locate new burrows thus a schedule and maps should be provided.

2. The majority of tortoise sign was in the extreme southwest corner of the project site. This area is outside of the actual construction zone. Thus, the perimeter fence should be adjacent to the construction zone leaving the southwest corner excluded and undisturbed.
3. Disturbance of the washes should be minimized. Desert washes serve as refugia for a wide variety of desert animals, including the desert tortoise. All major washes should be fenced to prevent human (especially vehicular) access. Leachate should be prevented from eroding into all washes.
4. Compensation lands for habitat lost to the project should be acquired, the habitat enhanced by fencing, and its integrity guaranteed in perpetuity.

APPENDIX E
DRAFT MITIGATION COMPLIANCE PROGRAM

DRAFT
MITIGATION COMPLIANCE
PROGRAM

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DRAFT MITIGATION COMPLIANCE PROGRAM

DRAFT MITIGATION COMPLIANCE PROGRAM

CASTLE MOUNTAIN PROJECT SAN BERNARDINO COUNTY, CALIFORNIA

January 1990

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1.0 INTRODUCTION

1.1 PROPOSED ACTION

1. The Castle Mountain Project is a proposed open pit heap leach gold mine located in the Hart Mining District of Lanfair Valley in northeastern San Bernardino County, California. Lanfair Valley is located in the East Mojave National Scenic Area (EMNSA) of the California Desert Conservation Area (CDCA). The project site is comprised of about 2,735 acres of both Federal and patented lands. The operation would use conventional heap leach processing to recover gold in disseminated orebodies, to be processed at a rate of about three million tons per year for approximately 10 years. At project completion, about 890 acres of the site would be disturbed and would have to be reclaimed.
2. The primary environmental resource categories potentially affected by project development and addressed in the Castle Mountain Project Environmental Impact Statement/Environmental Impact Report (EIS/EIR) are geology, water, vegetation, wildlife, air quality, health and safety, visual resources, cultural resources, land use, socioeconomics, and infrastructure. Potential adverse impacts to the environment would be mitigated below a level of significance through regulatory requirements and through measures incorporated in project planning and design. This Mitigation Compliance Program (MCP) has been developed in order to facilitate adherence to mitigation conditions set forth by the U.S. Bureau of Land Management (BLM) and the County of San Bernardino (County) in the EIS/EIR and subsequently adopted by each agency in approving the project.

1.2 REGULATORY COMPLIANCE

1. This program has been prepared, and in its final form will be adopted, in compliance with Section 21081 of the Public Resources Code, as initiated by State of California Assembly Bill 3180 (AB 3180), and in compliance with Federal requirements set forth in 40 CFR, Part 1505.2 and 1505.3, for compliance with the National Environmental Policy Act (NEPA) (Public Law 91-190).
2. Section 21081 of the Public Resources Code requires that State and local agencies establish reporting or monitoring programs for projects approved by a public agency, whenever the approval involves the adoption of mitigation measures through either a negative declaration or

an EIR. This program for the Castle Mountain Project is designed to provide the structure for implementation of the required mitigation monitoring and reporting and is the initial step in achieving compliance with Section 21081.

3. Federal Council on Environmental Quality (CEQ) regulations require that, in the Record of Decision (ROD) for cases requiring environmental impact statements:

- ". . . A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation" (40 CFR, 1505.2[c]).
- "Agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases. Mitigation . . . and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented by the lead agency or other appropriate consenting agency" (40 CFR, 1505.3).

This MCP is designed to fulfill the intent of these Federal requirements, by providing the mechanism to monitor compliance with and enforcement of each mitigation condition specified in the ROD.

1.3 PURPOSE OF THE MITIGATION COMPLIANCE PROGRAM

1. This MCP presents a program for the monitoring, reporting, verification, remediation, and resolution of compliance status of mitigation conditions. It also specifies the participants, outlines their roles and responsibilities, and provides example report forms for compliance monitoring. For purposes of this MCP, mitigation conditions consist of mitigation measures specified in the EIS/EIR, plus other conditions which are within the jurisdiction of the BLM and/or County and will be conditions of approval to the BLM Plan of Operations and/or the County Conditional Use Permit.
2. The purpose of the MCP is to provide the structure for the monitoring and reporting that will be implemented, and to maintain compliance with permit conditions. The primary objective of the MCP is to assure that project activities (or lack of appropriate action) would not result in a violation of adopted permit conditions. Another objective of the MCP is to describe the means the BLM and County have at their discretion to implement various verification procedures, and to confirm that the Applicant (Project Owner/Operator) is meeting the requirements of mitigation conditions. In the event permit conditions are not properly complied with, the MCP outlines the reporting mechanisms for the BLM and/or County to be notified immediately and to be the final authorities in determining remedial action(s), if necessary.

1.3.1 USE BY LEAD AGENCIES

1. The MCP has been designed in compliance with NEPA and CEQA for use by both the BLM and County, as the agencies responsible for assuring that the Project Owner/Operator maintains mitigation compliance. Some permit approval conditions adopted by these agencies will be similar, and coordination between the agencies will avoid duplication of efforts and reduce paperwork. Such coordination may at times require close BLM and County oversight of the day-to-day implementation of the MCP. At other times, the conduct of occasional verification procedures will be all that is necessary to assure timely and accurate compliance with adopted mitigation conditions.
2. The MCP is intended to be a tool that will be used by the Project Owner/Operator in completing monitoring and providing the required documentation on the compliance status of mitigation conditions. The MCP describes how field observations of construction and operations activities will be recorded and reported on a regular basis. The data collected will be compiled to create a data base of information which will be developed and maintained as a part of normal project operations. The BLM and County will have access to this compliance data base which, together with special environmental studies, will serve to provide the agencies with an up-to-date status for each individual mitigation condition, actual environmental impacts as they occur, and the effectiveness of any necessary remediation.
3. The MCP is flexibly structured. It can incorporate the wide variety of mitigation conditions specified in BLM and County permits. Also, this MCP is structured so that it would be able to incorporate BLM and/or County approved changes in project operations that could occur during the 10-year mine life. Examples of such changes might be a change in the rate of ore processing or facilities design refinement from engineering detail. Such changes could occur only after required BLM and/or County review and approval. Once approved by the BLM and/or County, such changes could easily be incorporated into existing compliance procedures.

1.3.2 USE BY OTHER REGULATORY AGENCIES

1. Numerous permits and approvals by other local, State, and Federal agencies will be needed for aspects of the project (see Appendix A, List of Permits and Approvals). Each of these permits would have conditions specified by the authorizing agency. This would result in hundreds of separate permit conditions affecting virtually every aspect of project facilities and project operations.

2. The procedures set forth in this MCP are described as they apply to BLM and County requirements. With minor modifications, these procedures also could be used by other permitting agencies in order to fulfill their obligations under CEQA and NEPA and to assure project compliance with the conditions of their permits. These agencies could utilize the same information data base, thereby avoiding redundancy in those instances when, as frequently happens, a permit condition specified by one agency is either the same as, or similar to, a condition specified by another agency.

1.4 OVERVIEW OF MITIGATION COMPLIANCE PROGRAM

1. The MCP is intended to be dynamic, such that changes which may occur in Federal and State regulations and/or the project itself over the anticipated 10-year project life can be readily incorporated. It also can evolve in response to increased efficiencies in data gathering, new technology, or to provide BLM and the County with information in a different format. Substantial changes in the project, such as major alteration to the maximum permitted mine pit configuration, or expansion of the heap leach facilities, would only occur in compliance with BLM and County regulations, following appropriate environmental review and documentation.
2. As addressed in this document, there are three primary elements of the MCP: monitoring, reporting, and verification of compliance status. In addition, the MCP provides a method for resolution of differences of opinion, and for program modifications.
3. Personnel from the BLM, County, and Project Owner/Operator are all involved in implementation of the MCP. The primary role of BLM and County personnel is in administration of the MCP, review of required reports, and verification of compliance. The role of Project Owner/Operator personnel is the day-to-day monitoring and reporting associated with implementation of the compliance program. The Project Owner/Operator shall retain professionals, approved by the BLM and County, to monitor the performance of mitigation conditions. The primary project representative is the Mitigation Compliance Coordinator (MCC), appointed by the Project Owner/Operator, subject to the approval of the BLM and County. Assistance in mitigation monitoring may be provided by environmental monitors (EM) and/or resource specialists (RS), who assist the MCC on an as-needed basis.

4. The compliance process involves systematic monitoring and reporting on the initiation, effectiveness, and completion of mitigation measures. The results of this monitoring are to be recorded on pre-printed forms: Environmental Compliance Monitoring (ECM) reports and Out of Compliance Notifications (OCN). The results of monitoring are compiled in interim, quarterly, and annual reports for submittal to the BLM and County for review and verification.

1.5 CONTENTS OF MITIGATION COMPLIANCE PROGRAM

1. The contents of this MCP have been arranged to provide a clear and accurate description of how compliance with mitigation conditions contained in BLM and County permits and approvals will be monitored for the Castle Mountain Project.
2. The remainder of the MCP is organized into the following primary headings:
 - **2.0 Organization and Management** - This chapter identifies the organizations involved in mitigation compliance, with a brief description of the role of each.
 - **3.0 Program Implementation** - This chapter describes the elements of the compliance program: monitoring, reporting, remediation, verification, personnel, resolution, and plan modification.
 - **4.0 Acronyms and Abbreviations** - This chapter provides an alphabetical listing of the acronyms and abbreviations which are contained in this document.
 - **Appendix A: List of Permits and Approvals** - A list of the major permits and approvals required for the Castle Mountain Project and the agencies involved is provided.
 - **Appendix B: Permit Conditions and Monitoring Measures** - This appendix contains a description of each permit condition, criteria required to demonstrate compliance, and monitoring activities to be performed. These specifications, which are key to implementation of monitoring and reporting, will be completed when final permit conditions are developed by each agency.
 - **Appendix C: Compliance Monitoring Forms** - This appendix contains standardized forms for use in reporting mitigation compliance status and an explanation of information to be provided on the forms.
 - **Appendix D: Mitigation Compliance Contacts** - These are the BLM, County, and Project Owner/Operator representatives for program administration and implementation.

2.0 ORGANIZATION AND MANAGEMENT

1. This MCP is designed so that final responsibility for permit compliance review and verification remains with the BLM and County, while the burden of day-to-day monitoring and reporting is the responsibility of the Project Owner/Operator. This organization is illustrated in Figure 2.1, Program Organization and Structure. The intent of the organization structure shown is to provide objective and timely monitoring, reporting, and verification of mitigation condition compliance. The organization is such that the burden of proof of compliance is on the Project Owner/Operator, while the role of the agencies is to verify the accuracy and completeness of compliance documentation.
2. As shown in Figure 2.1, the responsibility for administration lies with the BLM and County as the primary permitting agencies for the project; involvement of other agencies would occur through them. Unless it is proprietary, project-related information becomes part of the public record when it is accepted by the BLM or County. It then is accessible by other agencies and the public.
3. Day-to-day program implementation is the responsibility of the Project Owner/Operator, subject to approval of the BLM and County, as program administrators. Actual conduct of the program is the role of the MCC, appointed by the Project Owner/Operator, subject to the approval of the BLM and County.
4. A description of the role of the BLM, County, Project Owner/Operator, other agencies, and the public is presented in the following sections.

2.1 U.S. BUREAU OF LAND MANAGEMENT

1. The BLM is the agency responsible for administering public lands in the project area (i.e., all project lands except patented mining claims). The BLM is responsible for NEPA compliance and for approval of the Plan of Operations, rights-of-way, and other Federal permits/approvals for the Castle Mountain Project. The participating BLM office is the Needles Resource Area office. An employee at that office will be designated as the BLM's point of contact for project mitigation compliance administration (see Appendix D, Mitigation Compliance Contacts).

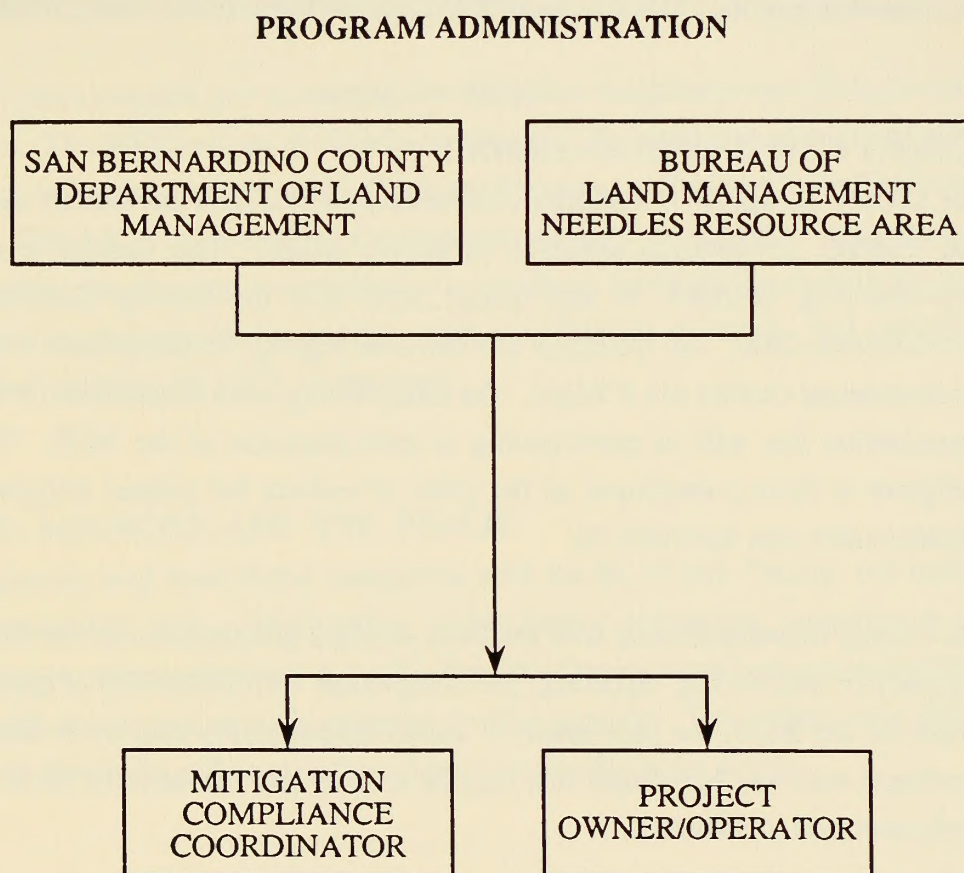


FIGURE 2.1

**PROGRAM ORGANIZATION
AND STRUCTURE**CASTLE MOUNTAIN PROJECT
MITIGATION COMPLIANCE PROGRAM**ENVIRONMENTAL SOLUTIONS, INC.**

2. For issues associated with this MCP, the BLM may interact directly with the County to verify the accuracy of monitoring and reporting the compliance status of mitigation conditions common to both agencies. The parameters of shared responsibility relative to this project will be consistent with any agreement that may be entered into between the BLM and County for implementation of the California Surface Mining and Reclamation Act (SMARA).

2.2 COUNTY OF SAN BERNARDINO

1. The County has approval authority over unincorporated land not directly regulated by State and Federal government agencies or Indian tribes. The County is responsible for implementing SMARA, in accordance with both the County General Plan and the Development Code. The County is also the Lead Agency for compliance with the California Environmental Quality Act (CEQA). The Land Management Department for the County is the organization that will be participating in administration of the MCP. This agency will designate a County employee as the point of contact for project mitigation compliance administration (see Appendix D).
2. The County interacts directly with the BLM during implementation of the MCP, to verify the accuracy of monitoring, reporting, and compliance with conditions of approval. As noted above for the BLM, the parameters of shared responsibility relative to this project will be consistent with any agreement that may be entered into between the BLM and County for implementation of SMARA.

2.3 PROJECT OWNER/OPERATOR

1. The Project Owner/Operator is responsible for compliance with the conditions of project permits and approvals as specified by the BLM and County. When requested, the Project Owner/Operator will interact with the BLM and County to provide them assistance with administration of the MCP in matters of monitoring, reporting, verification, and resolution of compliance status. The MCP point of contact for the Project Owner/Operator is the MCC (see Appendix D).

2. The Project Owner/Operator is also responsible for managing project construction and operation activities, so that these activities are consistent with maintaining compliance with project mitigation conditions. If necessary, the Project Owner/Operator has the responsibility to halt or redirect construction or operations activities in a particular area in the event there is the potential for violation of mitigation conditions.
3. The MCC plays a central role in assuring that mitigation compliance specifications are properly completed. The MCC will be the hands-on manager of compliance monitoring activities, in addition to being the primary point of contact between the Project Owner/Operator and the agencies. The MCC is involved in almost all elements of the program, with responsibilities which include the planning and conduct of compliance monitoring, assuring the quality and accuracy of routine monitoring reports, producing interim, quarterly, and annual summary reports, and updating the MCP, as necessary.

2.4 OTHER AGENCIES AND THE PUBLIC

1. Other agencies may have direct interaction with the BLM and County, but would not be directly involved with administering BLM/County mitigation compliance activities. Information in reports submitted to the BLM and/or County would, unless proprietary, be part of the public record and, as such, available to other agencies. This information also would be available to the public and organizations having an interest in the project.

3.0 PROGRAM IMPLEMENTATION

1. This chapter is the heart of the MCP, with detailed descriptions of the primary activities of mitigation compliance: monitoring, reporting, verification, remediation, verification, resolution, personnel, and plan modification. This chapter provides a framework for the program. From this framework, the BLM, County, and Project Owner/Operator can develop their independent, detailed procedures for the implementation and long-term conduct of the program.
2. The primary program elements are monitoring, reporting, verification, and resolution of compliance status. The monitoring and reporting are functions of the Project Owner/Operator and are subject to verification by the BLM and County. Verification is the responsibility of the Lead Agencies.

3.1 MONITORING

1. Monitoring will occur during all three project phases: construction, operations, and reclamation. The type and frequency of monitoring will depend on the requirements of each permit condition, specified as shown in Appendix B, Permit Conditions and Monitoring Measures. Monitoring may involve activities such as reviewing plans and specifications, observing actual construction, providing periodic checks of water levels in wells, regular inspection of project facilities during actual operations, and recording revegetation success rates. Based on actual permit requirements, these monitoring activities may occur at any specified interval, such as daily, weekly, monthly, or quarterly, to be determined by the BLM or County.
2. It is expected that most monitoring would be conducted by the MCC. However, it also may be done by an EM or RS, depending on the level of technical expertise required. Monitoring will involve first-hand inspection and observation, appropriately documented and, as necessary, photographed.
3. Monitoring will be an integral aspect of project operations, with normalized procedures to maintain compliance with permit requirements. In order to enhance the effectiveness of normal monitoring, there is a procedure for project personnel to report exceptions (out of compliance or potentially out of compliance situations) to the MCC for subsequent reporting to the BLM and/or County. Such situations would be evaluated and remedial action taken as

the BLM and/or County. Such situations would be evaluated and remedial action taken as quickly as necessary, then incorporated back into normal monitoring procedures. The process of monitoring and reporting is outlined in Figure 3.1, Monitoring, and discussed in Section 3.2.

4. The timing of monitoring activities will be determined for each individual mitigation condition. It is anticipated that a number of conditions may be monitored on a daily basis during peak activity periods, with decreasing frequency as activities are curtailed and as onsite conditions stabilize. For example, following reclamation and the initial establishment of vegetation, comprehensive monitoring of revegetated and reclaimed areas may occur as infrequently as annually.

3.2 REPORTING

1. Federal law makes it a crime punishable by a fine of not more than \$10,000 or imprisonment for not more than five years to knowingly and willingly falsify, conceal, or cover up any material fact or make false statements in any matter within BLM's jurisdiction (Part 18, United States Code [U.S.C.] § 1001). This provision would be applicable to the Project Owner/Operator and the MCC, as its willful abuse would be punishable by law. The existence of this Federal sanction provides assurance as to the reliability of the proposed environmental reporting process.
2. The outcome of the monitoring process is reporting, shown in Figure 3.2, Reporting. Each monitoring event results in the generation of an ECM report and, for an out-of-compliance condition, an OCN. The ECM report (see Appendix C.1, Environmental Compliance Monitoring Report) will specify whether or not each mitigation condition is in or out of compliance. If the condition is in compliance, it may be deemed complete, or additional measures may be necessary to maintain a status of compliance. If the condition is out of compliance, it is assigned a priority level (Category 1, 2, or 3) for the application of remedial measures. The appropriate remediation will be selected based on the affected resource and the extent to which it is out of compliance. The adequacy of remedial measures will be determined by the BLM and County.

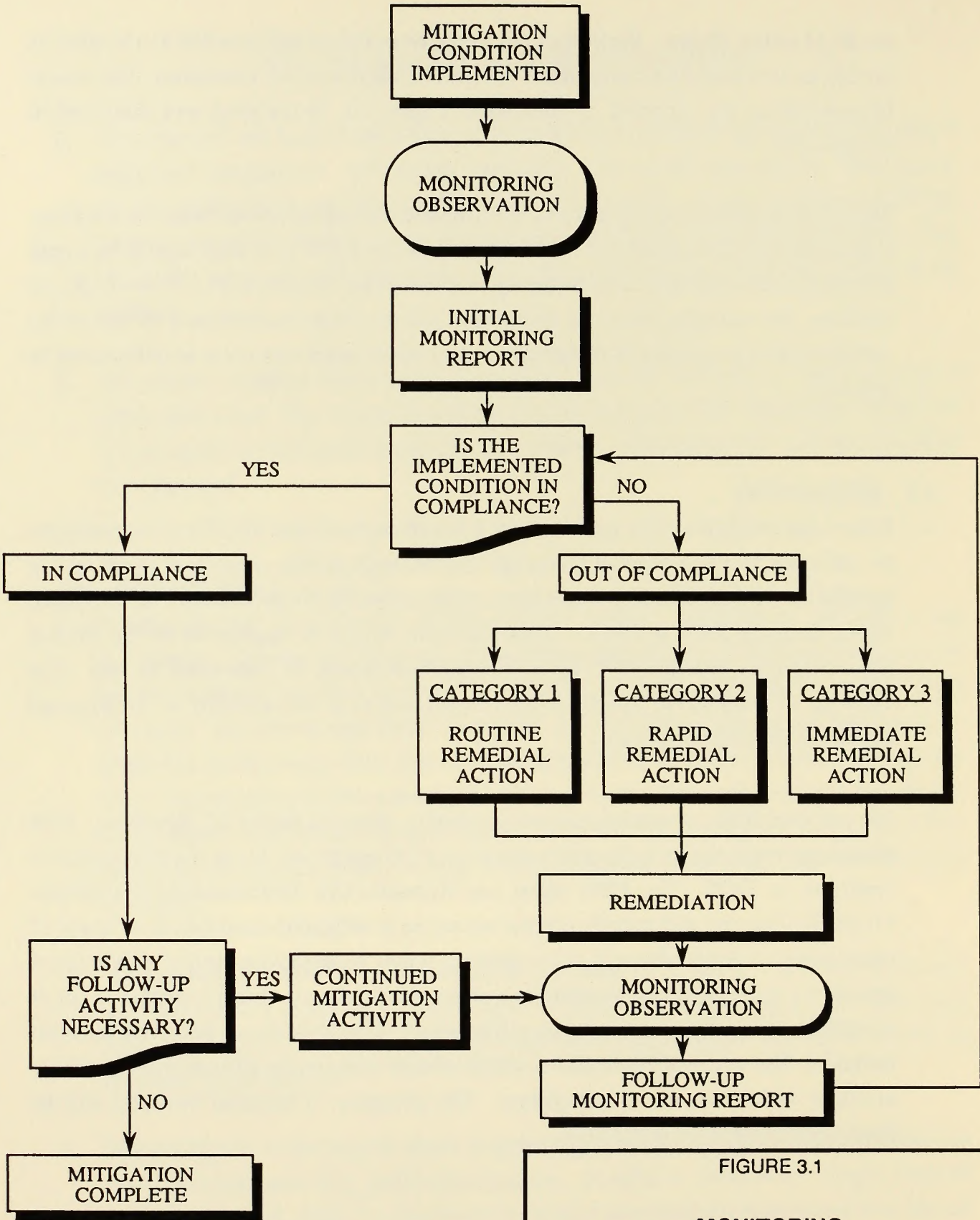


FIGURE 3.1

MONITORING

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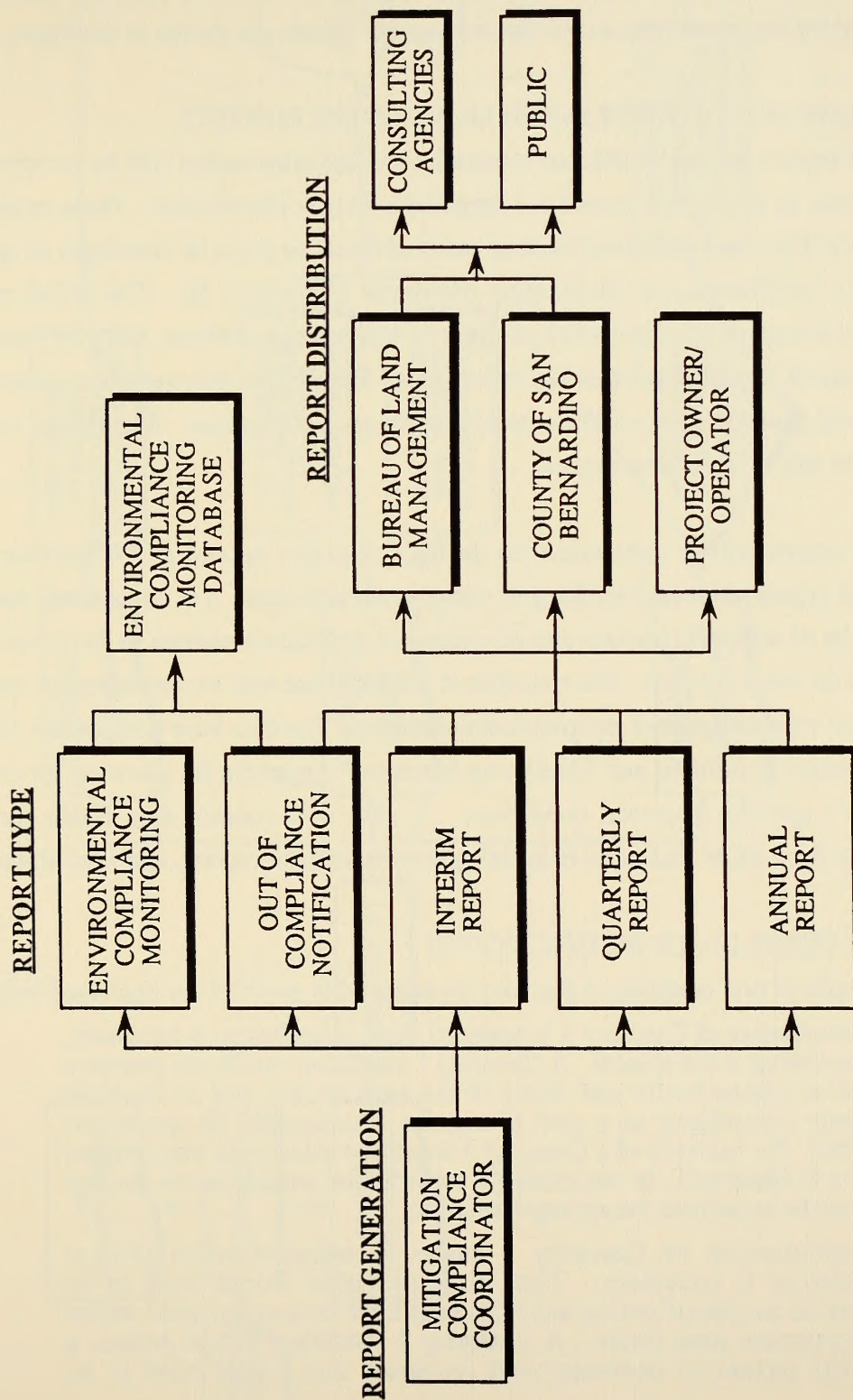


FIGURE 3.2

REPORTING

CASTLE MOUNTAIN PROJECT
MITIGATION COMPLIANCE PROGRAM
ENVIRONMENTAL SOLUTIONS, INC.

3. As shown in Figure 3.2, there are five types of reports: (1) ECM reports, (2) OCN reports, (3) interim reports, (4) quarterly reports, and (5) annual summary reports. Distribution is determined by the report type and/or the responsible agency, as shown in the figure.

3.2.1 ENVIRONMENTAL COMPLIANCE MONITORING REPORTS

1. The ECM reports will be distributed internally, and the information will be incorporated into the data base, as shown in Figure 3.3, Compliance Report Distribution. These reports consist of the report form and additional backup material (such as plans or drawings) as specified in the Permit Conditions and Monitoring Measures (Appendix B). The ECM reports are intended to document the day-to-day progress of mitigation conditions, and they may contain a large amount of technical and detailed information. Essentially, they represent a data gathering function, and data compiled will be entered into the project data base. Results will be available to the BLM and County upon request.
2. The ECM reports will be summarized by the MCC for entry into the ECM data base, a critical tool for the organization and tracking of compliance activities. It is anticipated that this data base may be of scientific interest and of assistance to decision makers in the development of conditions for other projects. The structure of the data base will be developed by the MCC, in consultation with compliance program administration. The data base will contain information from the Permit Conditions and Monitoring Measures (Appendix B), allowing for reference to an agency's specific approval conditions. It also will contain data fields for entry of information from ECM and other monitoring reports, interim reports, and special studies.

3.2.2 OUT OF COMPLIANCE NOTIFICATIONS

1. The categories of non-compliance that may be assigned in an OCN are explained below:
 - A determination of Category 1 is assigned when remediation is necessary, but the timing is not critical. A Category 1 condition would not present a hazard to human health and safety or the environment and so could be routinely remediated as a part of regular construction or operations activities. An example of a Category 1 condition could be a structure not painted as stipulated. In this example, remediation would require that the structure be re-painted the appropriate color.
 - A determination of Category 2 status is assigned when prompt remediation is necessary. That is, remediation would need to be undertaken outside of routine activities in order to be accomplished within an appropriate time frame. A Category 2 condition would present a potential hazard to environmental resources and would need to be

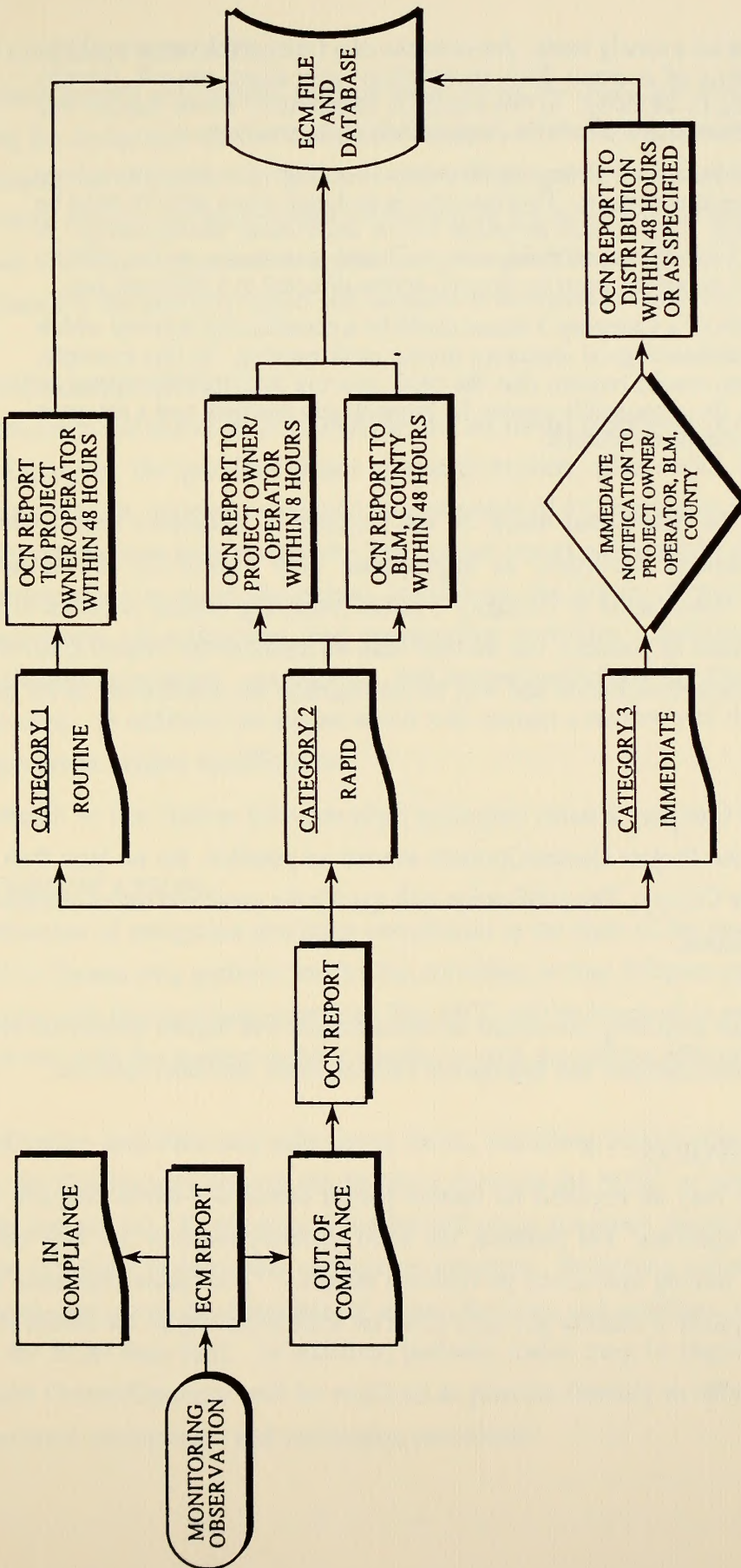


FIGURE 3.3

COMPLIANCE REPORT DISTRIBUTION

CASTLE MOUNTAIN PROJECT
MITIGATION COMPLIANCE PROGRAM
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remediated on a timely basis. An example of a Category 2 status could be the sloughing of an open ditch designed to carry storm run-off, thereby diminishing its capacity. In this example, remediation would require that the ditch be repaired prior to the occurrence of stormwaters.

- A determination of Category 3 status is assigned when immediate remediation is necessary. This category is assigned when activity must be immediately stopped and remedial action undertaken immediately. A Category 3 condition could degrade or destroy a resource, so the activity causing the condition must be stopped and/or directed to a different area.

An example of a Category 3 status could be a construction activity which uncovers archaeological resources during earth moving. In this example, remediation would require that the earth moving activity be stopped or redirected, the responsible agency be immediately notified, and a resource recovery plan be developed.

2. An OCN will be distributed based on the urgency of necessary remediation, utilizing telecommunications facilities, as appropriate (see Figure 3.3, Compliance Report Distribution). Notification of Category 1 status (requiring routine remedial action) will be distributed as soon as possible, but no later than 48 hours to the Project Owner/Operator to ensure appropriate remediation and will be summarized for distribution in the quarterly and annual reports.
3. Notification of Category 2 status (requiring rapid remedial action) will be distributed within eight hours to the Project Owner/Operator as soon as possible, but no later than 48 hours to the BLM and/or County. The notification will specify the condition out of compliance and the planned remediation.
4. Category 3 status (requiring immediate remedial action) will require immediate notification of the Project Owner/Operator and appropriate Federal, State, and local agencies.

3.2.3 INTERIM REPORTS

1. Interim reports may be required for certain permit conditions where frequent feedback is desired by the agencies. For instance, the BLM currently requires that any wildlife deaths resulting from mining operations be reported monthly. The Castle Mountain Project will similarly be required to monitor any such effect on wildlife and report the results to BLM as an interim report.

3.2.4 QUARTERLY REPORTS

1. Quarterly reports will contain summaries of the ECM, OCN, and interim reports generated during the designated quarter and a brief analysis of the status of each mitigation condition addressed. In addition, they will show the compliance status of all mitigation conditions. Quarterly reports will also contain a summary of the project status and modifications to the project. Additional requirements which may be generated by project modifications will be distributed in the quarterly report and included as revisions to this MCP.

3.2.5 ANNUAL REPORTS

1. In addition to the end-of-year quarterly report, an annual report will be prepared. This will be a summary of the previous year's quarterly reports, plus major occurrences, such as alterations to the adopted conditions or summaries of a Compliance Resolution Conference (CRC) which may have occurred. The annual report will contain a brief analysis of the activities taken to meet the permit conditions, the status of specified conditions, the effectiveness of mitigation and monitoring activities, additional requirements for completing/maintaining compliance, and recommendations for changes in mitigation or monitoring. In addition, the annual report will contain a summary of the year's activities and, if appropriate, project modifications.

3.3 VERIFICATION

1. Verification of mitigation condition compliance is the right of the responsible agency. The BLM or County may perform verification activities, or may delegate certain activities to other agencies with the necessary expertise. The MCC will be involved in verification activities, as the person with the greatest ongoing familiarity with the various mitigation conditions.
2. Verification activities may take many forms, including consultation with another agency (i.e., the County may consult the BLM), a query to the MCC, or planned or unannounced onsite inspections. Verification activities will occur at agency discretion, consistent with the rights of project management and agency practices. Permitting agencies have the power of entry to conduct onsite inspection of project facilities and activities, monitoring procedures, and the ECM data base. In addition, periodic audits may be required. If necessary, the Project Owner/Operator will be required to provide funding to offset the costs of agency compliance management and verification procedures.

3.4 RESOLUTION OF COMPLIANCE STATUS

3.4.1 INFORMAL ENFORCEMENT PROCESS

1. A method must be provided for resolution of disputes, should they arise, regarding the status of a specific mitigation condition. It is to the advantage of all parties involved to resolve potential disputes as simply and as rapidly as possible, so that unnecessary resources are not expended. To this end, the MCP provides an informal mechanism to resolve such disputes. Regardless of approach, final resolution is the responsibility of the permitting agency.
2. If a dispute over compliance arises, there would be a CRC to provide the responsible agency and Project Owner/Operator and/or MCC the opportunity to discuss the issue and find an acceptable solution. This type of meeting would enable potential conflicting opinions and concerns to be aired, points of negotiation to be discovered, and creative solutions to be reached. Consultation of experts knowledgeable on the issue may be required. The CRC could produce meeting minutes or a memorandum of agreement, to be formally adopted as the agreed upon course of action. The decisions reached at such a conference would be included in subsequent quarterly and/or annual reports.
3. Should this informal approach not be successful, then a formal enforcement process would be initiated, as described in the following section.

3.4.2 FORMAL ENFORCEMENT PROCESS

1. If opposing views cannot be reconciled in a CRC, then a more formal procedure could be invoked. If BLM is a party to the dispute, a Notice of Non-compliance would be issued by the California Desert Resource Area office. The Project Owner/Operator could appeal the Notice to the BLM State office.
2. If the County is a party to the dispute, the regulations and procedures contained in the County Building Code and General Plan and Development Code would apply to its resolution. These procedures begin with the issuance of a Correction Notice by the County, stating the nature of the violation, the necessary remediation measure, and the schedule for remediation activities. The Project Owner/Operator may reply to this notice and discuss resolution of the issue with the County representative. If the violation is not remediated within the schedule specified in the Correction Notice, an Order to Comply is issued and, if applicable, a Notice to Stop Work. If the Order to Comply is subject to dispute, the County issues a notification that an Infraction Citation will be issued on a particular date. If the remediation measure is not undertaken prior to the Infraction Citation issuance date, a citation is issued by the County.

3.5 PERSONNEL

3.5.1 MITIGATION COMPLIANCE COORDINATOR

1. Mitigation monitoring will be managed directly by the MCC. The position of the MCC will be full-time and funded by the Project Owner/Operator, with office facilities on the project site. The MCC is responsible for producing reports and has the authority to address compliance issues as they arise. The MCC is accountable to the BLM, County, and Project Owner/Operator for the accuracy and completeness of mitigation compliance reports and activities. This relationship establishes the framework for independent and objective monitoring of compliance conditions on a day-to-day basis.
2. The MCC will be an environmental professional, appointed by the Project Owner/Operator (subject to approval by the BLM and County, such approval not to be unreasonably withheld), with management and multidisciplinary technical capabilities and familiarity with the operational procedures of an open pit mining facility. The MCC will:
 - Maintain a working knowledge of the permit conditions, construction, operations, reclamation schedules and activities, revisions made to permit conditions, and revisions to project construction, operations, and reclamation schedules and activities.
 - Train and direct the EM/RS in data gathering activities and special studies.
 - Create and maintain the ECM/OCN database.
 - File ECM/OCN and RS reports with required documentation.
 - Provide briefings, as needed, to the BLM, County, Project Owner/Operator, and construction and operations contractors.
 - Schedule meetings, prepare agendas, record and distribute minutes.
 - Have the authority to stop or redirect construction, operations, and reclamation activities in the event an activity presents a threat to compliance.
3. As illustrated in Figure 3.2, the reporting of mitigation compliance status is primarily the responsibility of the MCC, who is responsible for the accuracy and quality of reports and for proper report distribution. The reporting functions of the MCC include:
 - Immediately notifying project management of a potential or existing out of compliance condition.
 - Reporting out of compliance conditions to the BLM and/or County.
 - Providing remediation of out of compliance conditions through consultation with the BLM/County and Project Owner/Operator.
 - Performing quality assurance checks on reports submitted by the EM/RS.
 - Preparing the quarterly and annual reports for submission to the BLM, County, and Project Owner/Operator.

3.5.2 ENVIRONMENTAL MONITORS

1. The EM serve as an extension of the MCC in performing mitigation monitoring during construction, operations, and reclamation. These persons may be specialists in one or more environmental resources (such as water, biology, air quality) and/or other persons with qualifications appropriate to the mitigation being observed. In consultation with the MCC, the EM have the authority to stop or redirect specific construction, operations, and reclamation activities, to the extent that these activities could result in a condition of non-compliance. Examples are provided under the discussion of Category 1, 2, and 3 conditions, in Section 3.2.2.
2. The EM assist the MCC in fulfilling reporting requirements. Responsibilities include:
 - Preparing and submitting reports for MCC review and approval.
 - Immediately notifying the MCC of a potential or existing out of compliance condition.

3.5.3 RESOURCE SPECIALISTS

1. The purpose of the RS is to perform special environmental studies or monitoring. The RS will be technical experts in areas necessary to assure compliance with specific mitigation conditions. Over the life of the project, specialists in many resources, such as bats, desert tortoise, and arid lands vegetation, may be utilized. Special studies may be required for various reasons, including the conditions of approval, evaluating compliance, or determining the effectiveness of remediation.
2. The RS participate in reporting by:
 - Keeping the MCC apprised on a weekly or more frequent basis of their activities, findings, and recommendations.
 - Preparing and submitting reports to the MCC.
 - Providing specific information to the MCC for quarterly and annual reports.
 - Immediately notifying the MCC of a potential or existing out of compliance condition.

3.6 PROGRAM MODIFICATION

1. While the permit conditions of approval could not be changed by unilateral action of the approving agency, it is recognized that changes could occur during the 10-year life of this project and would need to be accommodated in this MCP. For example, redundant results from a weekly onsite monitoring requirement could result in a request for a less frequent

schedule, such as changing to monthly or quarterly monitoring and/or reporting. An evaluation of the proposed change would need to be made by agency staff based on considerations such as:

- Is the modification consistent with the environmental impact analysis completed for the project?
- Is the modification consistent with the adopted conditions of approval?

2. In this manner, minor project modifications could be readily incorporated into the MCP. This provision does not, however, permit project modifications to be made without appropriate agency evaluation and approval.

4.0 ACRONYMS AND ABBREVIATIONS

1. The definitions provided below are for clarification of abbreviations and acronyms used in this document.

<u>ABBREVIATION/ ACRONYM</u>	<u>DEFINITION</u>
AB	Assembly Bill
BLM	Bureau of Land Management
CDCA	California Desert Conservation Area
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
County	San Bernardino County
CRC	Compliance Resolution Conference
CUP	Conditional Use Permit
ECM	Environmental Compliance Monitoring Report
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EM	Environmental Monitor
EMNSA	East Mojave National Scenic Area
MCC	Mitigation Compliance Coordinator
MCP	Mitigation Compliance Program Plan
NEPA	National Environmental Policy Act
OCN	Out of Compliance Notification
PRC	Public Resources Code
ROD	Record of Decision
RS	Resource Specialist
SMARA	California Surface Mining and Reclamation Act

APPENDIX A
LIST OF PERMITS AND APPROVALS

APPENDIX A

LIST OF PERMITS AND APPROVALS

<u>PERMIT/APPROVAL</u>	<u>AGENCY OR APPROVING AUTHORITY</u>	<u>PURPOSE</u>
<u>FEDERAL</u>		
Plan of Operations	Bureau of Land Management	Mine and Reclamation Plan Approval.
Environmental Impact Statement	Bureau of Land Management	Environmental Compliance.
Cultural Resource Permit	Bureau of Land Management	Section 106 Investigation.
Right-of-Way Easement or Special Use Permit	Bureau of Land Management	Electric power and water line rights-of-way.
Purchase and Storage of Explosives Permit	Department of Justice, Bureau of Alcohol, Tobacco, and Firearms	Purchase of explosives in one state for use in another.
Emergency Fire, Evacuation and Rescue Plans (55.4-39.B)	Department of Labor, Mine Safety, and Health Administration	Separate plans required for surface and underground operations.
Notice of Start of Operations	Department of Labor, Mine Safety, and Health Administration	Notice must be filed prior location and ownership.
Legal Identity Report	Department of Labor, Mine Safety, and Health Administration	Report on type of operation, location and ownership.
Record of Inspection of Self-Propelled Equipment (55.9-1)	Department of Labor, Mine Safety, and Health Administration	Must be maintained for six months and available to inspectors.
Record of Testing the Resistance of Electrical Ground System (55.12-28)	Department of Labor, Mine Safety, and Health Administration	Test required annually and after installation, repair, or modification. Record of tests must be available to inspectors.
Miner Training Plan (Title 30, Subchapter H, Part 48, Subpart B)	Department of Labor, Mine Safety, and Health Administration	Training by certified instructors is mandatory for all personnel.

<u>PERMIT/APPROVAL</u>	<u>AGENCY OR APPROVING AUTHORITY</u>	<u>PURPOSE</u>
<u>STATE OF CALIFORNIA</u>		
Waste Discharge Permit	Colorado River Basin Regional Water Quality Control Board	Surface and ground water quality control.
Ground Water Well Installation on State Lands	State Land Commission	Rights to install wells on State lands.
<u>COUNTY OF SAN BERNARDINO</u>		
Environmental Impact Report	San Bernardino County Land Management Department	Environmental Compliance.
Site Approval	San Bernardino County Land Management Department	Consistency with planning/ zoning.
Grading Plan Approval	San Bernardino County Department of Building and Safety	Compliance with appropri- ate codes and standards.
Building Plan Approval	San Bernardino County Department of Building and Safety	Compliance with appropri- ate codes and standards.
Building Permits	San Bernardino County Department of Building and Safety	Fire safety, building safety, compliance with appropriate codes and standards.
Approval of Mining/ Reclamation Plan	San Bernardino County Land Management Department	Satisfaction of Surface Mining and Reclamation Act.
Water System Permit	San Bernardino County Department of Environmental Health Services	Supply, storage, and distri- bution. System design, water quality.
Sewage Disposal System Permit	San Bernardino County Department of Environmental Health Services	Location, design, percola- tion rates for septic tanks and underground leaching fields.
Purchase and Use of Explosives	San Bernardino County Sheriff	Proper storage and handling, possibly bonding.

<u>PERMIT/APPROVAL</u>	<u>AGENCY OR APPROVING AUTHORITY</u>	<u>PURPOSE</u>
<u>COUNTY OF SAN BERNARDINO</u> (Continued)		
Water Well Permit and Inspection	San Bernardino County Department of Environmental Health Services	
Authority to Construct	San Bernardino County Air Pollution Control District (APCD)	Air pollution source location and control.
Permits to Operate	San Bernardino County APCD	Air pollution emissions, monitoring, and reporting.

APPENDIX B

PERMIT CONDITIONS AND MONITORING MEASURES

APPENDIX B

PERMIT CONDITIONS AND MONITORING MEASURES

1. This section is designed to contain the record of all mitigation measures which were identified in the EIS/EIR and adopted as conditions of approval in BLM and County permits for the Castle Mountain project. It also includes any additional mitigation conditions not identified in the EIS/EIR, but required of the Project Owner/Operator as conditions of approval by these agencies. As the record of permit conditions, this Appendix is the heart of the day-to-day implementation of the MCP, since it specifies mitigation conditions, compliance criteria, monitoring activities, and schedules for compliance. This record, and the forms which follow, are provided as examples. They are subject to change, depending on the needs and requirements of Federal, State, and County officials, as well as the MCC.
2. Figure B.1 (Permit Condition and Monitoring Specification) is the template to be completed with information regarding each permit condition. Each condition will be assigned its own number so that the monitoring and compliance may be easily tracked. In addition, the specification form shows the source document, page number, and environmental resource for each condition.
3. Following this information is the language of the condition as it appears in the permit, project phase, and agency of jurisdiction. The specifications contains the criteria to be met for compliance with the condition, the schedule for reporting the status of compliance, and the monitoring schedule and activity. The Specification Form is completed with information regarding report distribution and verification. The activity required for agency verification will be described. There also is a place for additional information, such as special concerns of the approval agency, or monitoring peculiarities which need to be accommodated.

Permit Condition Number: _____
 Source Document(s): _____
 Page Number: _____
 Environmental Resource: _____
 Permit Condition: _____

 Project Phase:
 Preconstruction/Design _____
 Construction _____
 Operations _____
 Reclamation _____
 Permit Condition Approval Agency:
 Bureau of Land Management _____
 County of San Bernardino _____
 Compliance Criteria: _____

 Reporting Schedule: _____

 Monitoring Schedule and Activity: _____

 Required Documentation: _____

 Report Distribution:
 Bureau of Land Management
 County of San Bernardino
 Project Owner/Operator
 Other _____

Verification Activity To Be Performed:

Additional Information:

EXPLANATION:

The specifications for each permit condition will be determined by the BLM and County at the time the decision-making body considers the project application. Based on each condition, information pertaining to compliance criteria, reporting and monitoring will be developed, as indicated above, and documented in the approved MCP.

FIGURE B.1

**PERMIT CONDITION AND
MONITORING SPECIFICATION**

CASTLE MOUNTAIN PROJECT
MITIGATION MONITORING PROGRAM

ENVIRONMENTAL SOLUTIONS, INC.

APPENDIX C
COMPLIANCE MONITORING FORMS

APPENDIX C

COMPLIANCE MONITORING FORMS

C.1 ENVIRONMENTAL COMPLIANCE MONITORING REPORT

1. The Environmental Compliance Monitoring Report shown in Figure C.1, Environmental Compliance Monitoring Report, is the standard form for reporting monitoring activities. It is designed to provide the field monitor (MCC, Environmental Monitor, or Resource Specialist) with an accurate means of tracking mitigation conditions, noting compliance status, indicating observations and recommendations to maintain compliance, and ensuring proper notification and distribution.
2. Block 1 of the report contains a pre-printed sequential report number. To ensure accountability, all reports will be filed and placed in central files, which will be available to the BLM and County.
3. Block 2 contains spaces for the permit condition number and the date and time of observation. The permit condition number enables the report to be traced to a specific permit condition and for the status of each condition to be tracked. There also is space for the field monitor to make a brief notation of the activity monitored and its location.
4. The type of report is noted in Block 3. Reports can be either the initial report on a particular mitigation measure, or a follow-up. If the report is a follow-up, the previous report number will be noted to ensure continuity in tracking.
5. Block 4 contains the recommendation of the monitor regarding the compliance status of the mitigation condition. The status is noted as being in compliance or out of compliance. If the condition is in compliance, the monitor indicates whether additional measures and/or monitoring are required, or if the specified condition has been fully met. If the condition is out of compliance, it is so noted. The monitor proceeds to Block 5, then completes an Out-of-Compliance Notification (see C.2, Out of Compliance Notification Form). Space also is provided in Block 4 for observations and recommendations to be noted.

CASTLE MOUNTAIN PROJECT																			
ENVIRONMENTAL COMPLIANCE MONITORING REPORT																			
1	ECM REPORT NO.: <input style="width: 150px;" type="text"/>																		
2	REFERENCE DATA <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 40%; padding: 2px;">PERMIT CONDITION NUMBER: <input style="width: 90%;" type="text"/></td><td style="width: 20%; padding: 2px;">DATE: <input style="width: 80%;" type="text"/></td><td style="width: 10%; padding: 2px;">TIME: <input style="width: 80%;" type="text"/></td><td style="width: 10%; padding: 2px; text-align: center;"><div>A</div><div>P</div></td></tr><tr><td colspan="4" style="padding: 2px;">PERMIT CONDITION: <input style="width: 98%;" type="text"/></td></tr><tr><td colspan="2" style="padding: 2px;">ACTIVITY: <input style="width: 95%;" type="text"/></td><td colspan="2" style="padding: 2px;">LOCATION: <input style="width: 95%;" type="text"/></td></tr></table>			PERMIT CONDITION NUMBER: <input style="width: 90%;" type="text"/>	DATE: <input style="width: 80%;" type="text"/>	TIME: <input style="width: 80%;" type="text"/>	<div>A</div> <div>P</div>	PERMIT CONDITION: <input style="width: 98%;" type="text"/>				ACTIVITY: <input style="width: 95%;" type="text"/>		LOCATION: <input style="width: 95%;" type="text"/>					
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INITIAL <input type="checkbox"/>	FOLLOW-UP TO REPORT <input type="checkbox"/>																		
4	COMPLIANCE STATUS <table style="width: 100%;"><tr><td style="width: 50%;">IN COMPLIANCE <input type="checkbox"/></td><td style="width: 50%;">OUT OF COMPLIANCE <input type="checkbox"/></td></tr><tr><td colspan="2" style="padding-top: 10px;">ADDITIONAL MITIGATION REQUIRED <input type="checkbox"/></td><td colspan="2" style="padding-top: 10px;">ADDITIONAL MONITORING REQUIRED <input type="checkbox"/></td></tr><tr><td colspan="4" style="padding-top: 10px;">OBSERVATIONS: _____ _____ _____</td></tr><tr><td colspan="4" style="padding-top: 10px;">RECOMMENDATIONS: _____ _____ _____</td></tr></table>			IN COMPLIANCE <input type="checkbox"/>	OUT OF COMPLIANCE <input type="checkbox"/>	ADDITIONAL MITIGATION REQUIRED <input type="checkbox"/>		ADDITIONAL MONITORING REQUIRED <input type="checkbox"/>		OBSERVATIONS: _____ _____ _____				RECOMMENDATIONS: _____ _____ _____					
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OBSERVATIONS: _____ _____ _____																			
RECOMMENDATIONS: _____ _____ _____																			
5	ENVIRONMENTAL MONITOR/SPECIALIST <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; padding: 2px;">PRINT NAME <input style="width: 95%;" type="text"/></td><td style="width: 50%; padding: 2px;">SIGNATURE <input style="width: 95%;" type="text"/></td></tr></table> MITIGATION COMPLIANCE COORDINATOR <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; padding: 2px;">PRINT NAME <input style="width: 95%;" type="text"/></td><td style="width: 50%; padding: 2px;">SIGNATURE <input style="width: 95%;" type="text"/></td></tr></table> RECEIPT BY RESPONSIBLE MANAGER <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 33%; padding: 2px;">PRINT NAME <input style="width: 95%;" type="text"/></td><td style="width: 33%; padding: 2px;">SIGNATURE <input style="width: 95%;" type="text"/></td><td style="width: 34%; padding: 2px;">DATE <input style="width: 80%;" type="text"/></td></tr><tr><td colspan="3" style="padding: 2px;">COMMENTS/ACTION _____ _____ _____</td></tr></table> REPORT DISTRIBUTION <table style="width: 100%;"><tr><td style="width: 33%;">BLM <input type="checkbox"/></td><td style="width: 33%;">CONSTRUCTION MANAGER <input type="checkbox"/></td></tr><tr><td>COUNTY <input type="checkbox"/></td><td>OPERATIONS MANAGER <input type="checkbox"/></td></tr><tr><td>PO/O <input type="checkbox"/></td><td>OTHER <input type="text"/></td></tr></table>			PRINT NAME <input style="width: 95%;" type="text"/>	SIGNATURE <input style="width: 95%;" type="text"/>	PRINT NAME <input style="width: 95%;" type="text"/>	SIGNATURE <input style="width: 95%;" type="text"/>	PRINT NAME <input style="width: 95%;" type="text"/>	SIGNATURE <input style="width: 95%;" type="text"/>	DATE <input style="width: 80%;" type="text"/>	COMMENTS/ACTION _____ _____ _____			BLM <input type="checkbox"/>	CONSTRUCTION MANAGER <input type="checkbox"/>	COUNTY <input type="checkbox"/>	OPERATIONS MANAGER <input type="checkbox"/>	PO/O <input type="checkbox"/>	OTHER <input type="text"/>
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BLM <input type="checkbox"/>	CONSTRUCTION MANAGER <input type="checkbox"/>																		
COUNTY <input type="checkbox"/>	OPERATIONS MANAGER <input type="checkbox"/>																		
PO/O <input type="checkbox"/>	OTHER <input type="text"/>																		

FIGURE C.1

**ENVIRONMENTAL COMPLIANCE
MONITORING REPORT**CASTLE MOUNTAIN PROJECT
MITIGATION COMPLIANCE PROGRAM**ENVIRONMENTAL SOLUTIONS, INC.**

6. Block 5 provides space to identify the person making the monitoring observation. This may be the MCC, an Environmental Monitor, or a Resource Specialist. The MCC signs the report to provide quality assurance for its contents and recommendations, to ensure that it is properly distributed and, if necessary, to coordinate future activities. To ensure notification of appropriate project personnel, the responsible manager acknowledges receipt of the ECM report. Space is provided for the managers to comment and to indicate action to be taken. Report distribution also is indicated.

C.2 OUT-OF-COMPLIANCE NOTIFICATION FORM

1. The Out of Compliance Notification (OCN) shown in Figure C.2, Out of Compliance Notification, is the standard form for notification of project activities that are out of compliance with permit conditions. If project activities are in compliance, this form is not utilized. The OCN provides the means to document the extent to which a permit condition is out of compliance. The OCN is circulated to the appropriate agency(ies) and Project Owner/Operator, and is the initial step in remediation of an out of compliance condition.
2. Block 1 provides space for reference information. Important here is the number of the ECM report which initially documented the out of compliance condition (see Figure C.1). This number ensures continuity of compliance progress tracking and reporting. Data from the ECM report descriptive of the date, time, activity monitored, and location are also entered into the OCN in Block 1.
3. The extent to which a condition is out of compliance is noted in Block 2. The degree to which a condition is out of compliance is noted as Category 1, 2, or 3, based on the extent of non-compliance and sensitivity of the condition. Category 1 indicates a condition which requires routine remedial action which can be accomplished during the course of normal project activities. Category 2 requires rapid remedial action, which may be outside of normal operating procedures/schedules. Category 3 requires immediate action which may disrupt or stop ongoing activities until the out of compliance condition has been remediated. The evidence of non-compliance is noted, with any additional accompanying information deemed appropriate (such as additional field verification performed by the MCC). Recommendations for remediation are provided. Immediate remedial actions taken prior to the issuance of the OCN are noted. In addition, the MCC recommends follow-up monitoring to verify the success of remediation.

CASTLE MOUNTAIN PROJECT OUT OF COMPLIANCE NOTIFICATION

1	REFERENCE DATA		ECM REPORT NO.:	
	PERMIT CONDITION:	DATE:	TIME:	A P
	ACTIVITY:			
	LOCATION:			

2	STATUS		
	CATEGORY 1 <input type="checkbox"/>	CATEGORY 2 <input type="checkbox"/>	CATEGORY 3 <input type="checkbox"/>
	OUT OF COMPLIANCE OBSERVATION:		
	RECOMMENDATIONS FOR REMEDIATION:		
ACTION TAKEN:			
RECOMMENDED FOLLOW-UP MONITORING:			

3	MITIGATION COMPLIANCE COORDINATOR			
	PRINT NAME		SIGNATURE	
	RECEIPT BY RESPONSIBLE MANAGER			
	PRINT NAME	SIGNATURE	DATE	TIME:
COMMENTS/ACTION				

FIGURE C.2

OUT OF COMPLIANCE NOTIFICATION

CASTLE MOUNTAIN PROJECT
MITIGATION COMPLIANCE PROGRAM

ENVIRONMENTAL SOLUTIONS, INC.

4. Block 3 provides space for the MCC and the responsible manager to sign the report, thereby formally documenting the notification. Space also is provided for the manager to comment on the content of the report and to indicate the type of action that has been taken to remediate the out of compliance condition.

APPENDIX D
MITIGATION COMPLIANCE CONTACTS

APPENDIX D
MITIGATION COMPLIANCE CONTACTS

<u>ORGANIZATION</u>	<u>ADDRESS</u>	<u>TELEPHONE NO.</u>
BLM	Bureau of Land Management 101 West Spike's Road Needles, California 92363 Attention: Castle Mountain Project Environmental Compliance Manager	(619) 326-4079
County of San Bernardino	County of San Bernardino Environmental Public Works Agency 385 North Arrowhead Avenue, 3rd Floor San Bernardino, California 92415-0182 Attention: Castle Mountain Project Environmental Compliance Manager	(714) 387-4110
Project Owner/Operator	Viceroy Gold Corporation 9457 S. Las Vegas Boulevard, Suite B Las Vegas, Nevada 89123 Attention: Castle Mountain Project Mitigation Compliance Coordinator	(702) 361-4776

